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TEACHER PREPARATION FOR OPEN-SPACE SCHOOLS

by

Ⓒ BERNARD L. MASTERS

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
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EDMONTON, ALBERTA
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THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "Teacher Preparation for Open-Space Schools" submitted by Bernard L. Masters in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

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Date August 23, 1973

ABSTRACT

The purpose of the study was to develop a curriculum resource unit to assist in preparing teachers for open-space schools. The paradigm developed for the study depended on the interaction of teachers and student teachers with resources, instruction, and school and university curricula in particular settings. The findings were limited by the degree to which this paradigm and the curriculum resource unit could be implemented.

The need to develop a curriculum resource to prepare teachers for open-space settings became apparent from a perusal of the literature. Observations in open area schools and discussions with teachers and university personnel confirmed this need. Ten articles were selected from literature on open-space to form the basis of a curriculum unit. The unit incorporated practical observations, activities, and general information on teaching in open area schools.

The study was initiated with 100 subjects drawn from three groups of graduates, undergraduates, and co-operating teachers in seven open area schools. Four paper and pencil instruments and an interview schedule were developed by the researcher to monitor feedback on the curriculum resource unit. The instruments and the data were submitted to panels of judges for review.

Data relating to teacher preparation, open-space, and perceptions of the three groups were analysed. Better communication between the schools and the preparation institution, with longer and more sequential practical experiences, was seen as a general need in the preparation of teachers. Making university

consultants more readily available to schools, providing curriculum resource materials for student teachers while they are undertaking teaching practice, and providing in-service workshops on specific open-space concepts were some ways of relating theory to the practical setting. Joint planning for, and co-operation during, student teaching should involve university personnel, teachers, and students if the dual curricula of the school and the preparation institution are to operate satisfactorily in schools.

The student teachers and teachers who participated in the study showed a definite lack of understanding of statements pertaining to open-space at the beginning of the study. The posttest showed a statistically significant change in this understanding for each group on all but one of the twelve statements. The findings suggest that the curriculum resource unit, when used in an open-space setting, does affect awareness regarding statements about open-space concepts.

The respondents indicated preference for both enclosed and open-space settings on the pretest and posttest measures. The greatest change in teaching preference occurred in the graduate group. On the posttest they favored teaching in open-space settings.

Comments from the three groups suggested specific modifications to content and format of the curriculum unit on the spatial environment developed for the study.

The study has provided evidence that further research could be undertaken to modify the procedures for developing curriculum resource units to assist in the preparation of teachers for open-space schools.

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CHAPTER 1

FORMULATION AND DEFINITION OF THE PROBLEM

> Alice (in Wonderland) was wandering through the forest when she was startled by the sudden appearance of the Cheshire Cat sitting on the bough of a tree. She was concerned about being lost so she said, "Would you tell me, please, which way I ought to go from here?" "That depends a good deal on where you want to get to," said the Cat.
>
> "I don't much care where. . .," said Alice.
>
> "Then it doesn't matter which way you go," said the Cat.
>
> ". . . so long as I get somewhere," Alice added as an explanation.
>
> "Oh, you're sure to do that," said the Cat, "if you only walk long enough." (Carroll, 1954:95)

Changes and innovations have been introduced into education in the hope of getting somewhere. Too often, the journey has been so long that the innovation expired along the way. Often, too, those involved in the changes found the effort to alter their own behavior and instructional patterns so difficult that they modified the new procedures and thus maintained the traditional operations (Carlson, 1965). In some instances, innovations faltered through hasty introduction without adequate preparation for the journey. The introduction of open-space facilities in elementary schools seems one such innovation which has wandered in the educational forest.

BACKGROUND TO THE STUDY

New trends in school functioning require adaptable preparation of teachers. Open-space facilities have been hailed as having great potential for pupils, but teachers find difficulty operating in this new environment (Cass, 1970; Eberle, 1969). A possible answer may reside in the development of a curriculum which will more adequately assist teachers to utilize this type of environment.

Teacher Preparation

The formal preparation of teachers has been based on the premise that there are areas of knowledge, skills, and values which may be made available to the student teacher and which will enhance performance in the teaching-learning situation.

Teacher preparation has traditionally been concerned with both "education" and "training". While many educators maintained that teachers are born, not made, others have argued that directed training can enhance native ability (Hilliard, 1971). The preparation of teachers normally involves four components: a general, liberal academic program; specialization in a discipline, learning the techniques of that discipline as well as its content; a professional education component traditionally centered in the philosophy, sociology, history, psychology, and methodology of education; and a practical component of experiences in schools. A balance between the provision of a sound, broad education founded in the academic disciplines, and rigorous, stimulating, and practical training based on in-depth school experiences seems desirable (Smith, 1969, 1971).

Teacher preparation has been seen as a continuing process, not separated into specialist compartments or undertaken by independent institutions (Garland & Foster, 1971; Lynch, 1971). Four periods have been identified in the life of a teacher: student, preservice teacher, beginning teacher, experienced teacher (Brottman, 1971; Probst, 1973). At each stage, new knowledge and new skills are required.

The preservice teacher, however, needs training in skills as much as in knowledge. Indeed, this may have been stressed insufficiently in the past. Ivey and Allen (1972) used videotape feedback with small groups to foster listening, attending, and mutual communication skills, and those skills which increase interpersonal sensitivity and psychological interpretation. Merrill (1968b) described similar skill development training which incorporated a segment on instructional design skills and their application.

As well as, and probably prior to, such skill development, the student teacher may acquire a knowledge of different teaching strategies. Joyce and Weil (1972a: 8-26) classified such strategies according to sources: social interaction, information-processing, personal, and behavior modification. Principles drawn from the major learning theorists were applied to teaching; these assisted the student teachers to adapt their teaching methods to particular learning environments.

Several innovations in objectives, structure, and content have been introduced into teacher preparation curricula. In some institutions the preparation program is aimed at developing a particular type of teacher: a facilitator, an innovator, a change-agent, a technologist, an instructional strategist, or a helper (Elementary Teacher Training Models, 1969). Although some institutions have retained a more departmentalized structure within the faculty of education, many have set out to integrate not only the university's "educational" role, but to provide much greater opportunity for in-school experiences. In some institutions the clinical professor, with duties in the university and in ~~the~~ school systems, has emerged to provide greater credence to the integration of theory with practice (Garland & Foster, 1971; Hazard & Chandler, 1972; McIntosh, 1971). New technologies have permitted different emphases on teacher preparation content; microteaching, computer assisted instruction, simulations, and self-instructional packages have provided content independent of the lecture and seminar. New freedoms claimed by society and by children in the schools have brought the need for different teaching strategies (Brottman, 1970; Cooper, 1971).

The professional and practical components in any teacher preparation program are often unique to each institution. They are affected by: (1) the nature of the goals and facilities of the schools to which the institution caters; (2) the previous academic exposure, abilities, interests, and selection of the student teachers or others accepting the courses offered; (3) the personal interests, background, competencies, and intents of the faculties of the institution and of the schools, as well as the criteria on which these people are selected; and (4) the general academic, social, and economic structure of the institution itself.

Open-Space

Open-space teaching facilities emerged in North America during the late fifties and in Edmonton less than a decade later (Hersom & MacKay, 1971: 3-11). As an architectural concept, the open-space facility was designed to reduce the number of interior walls in, and presumably the cost of, school buildings. Technological advances during the sixties enriched this setting with carpeting, climate control, and operable acoustic walls and baffle ceilings. At the same time, instructional technology emphasized the use of, and accessibility to, multi-media learning facilities (American Association of School Administrators, 1971). The incorporation of these advances into building design and educational materials made possible the transformation of the physical environments of schools (Educational Facilities Laboratories, 1971).

This new architectural pattern influenced the organization patterns, staffing patterns, and curricular patterns of the schools (Educational Facilities Laboratories, 1965). Partly as a result of these new design trends, instructional organization took new forms: flexible scheduling, family grouping, and the integrated day. Staffing in elementary schools tended to become more specialized; differentiated staffing was introduced; team and co-operative teaching reappeared. Independent or personalized study schedules, computer assisted instruction, and open education itself affected curricular patterns. Each of these, or some combination of them, was claimed to be more effective in open-space schools (Anderson, 1971).

Relevance to the Study

The development and modification of a teacher preparation curriculum to assist teachers and student teachers to develop awareness of open-space settings was an objective of this research.

The study arose out of concern for the disparate ways in which open-space settings are being used in some Edmonton schools. Variety in design, in physical facilities, and in instructional use prompted the researcher to ask questions about the nature of the preparation which teachers received before being assigned to such settings. A perusal of the literature confirmed that variety existed in other localities, and that there was little evidence of specific preparation programs.

STATEMENT OF THE PROBLEM

The research problem was to develop a teacher preparation curriculum resource unit to provide awareness of open-space settings for teachers and student teachers.

There were two sub-problems:

(1) To obtain information on the perceptions of the teachers and student teachers regarding the preparation of teachers for open-space settings, and

(2) To monitor reactions of teachers and student teachers to

the use of a prepared curriculum resource unit in open-space and enclosed classrooms.

IMPORTANCE OF THE STUDY

Teachers, student teachers, school administrators, and university personnel using open-space schools agree that special understanding and preparation are required by professionals who work in such environments. The methods employed in this preparation may differ for each institution. Literature on open-space suggests that little attempt has been made to prepare teachers for this type of setting (Kyzar, 1972). Developing a curriculum resource unit concentrating attention on awareness of open-space is one step towards such preparation. A unit which is self-instructional can be used as a resource for both preservice and in-service preparation.

The present study identifies features in the open-space environment which teachers and student teachers consider are important foundations for teaching in those settings. The resource unit is used to obtain reactions from teachers and student teachers in open areas to modify the unit for future use. Findings on both these sub-problems are important if teachers are to be equipped to teach in open-space environments.

The conceptual framework for the study is based upon a systems approach to education (Chapter 2). It draws from several paradigms of education and stresses interaction among six elements: (1) teacher, (2) learner, (3) setting, (4) resources, (5) curriculum, and

(6) instruction. In designing a curriculum resource unit for open-space schools, two of these elements--setting and resources--have been stressed. In teacher preparation, two curriculum-instruction systems operate simultaneously: one depends on the curricula taught to pupils in the school setting, the other depends upon the courses provided in the teacher education institution. The interaction among the six elements in both systems becomes more complex as the two systems overlap during teaching practice experiences.

A systems approach requires provision for feedback during the study. The reaction of the teachers and the student teachers to the curriculum resource unit in this study reflects both interaction among the components in the paradigm and feedback modifications for the unit. It is important to recognize the existence of two curriculum-instruction systems during teaching practice in interpreting the findings of the study on the application of theory in practical settings.

ASSUMPTIONS

The assumptions of the study are:

(1) A teacher preparation program should convey the philosophy of, and indicate instructional strategies appropriate to, particular school settings. Accordingly, the teachers and student teachers in this study were provided with a curriculum resource unit to promote an awareness of open-space settings.

(2) The subjects in the study were not representative of the

general population. They were drawn from three groups: undergraduate students, graduate students, and teachers. The findings need to be interpreted in the light of this assumption.

(3) Intervening variables such as intelligence, personality, and motivation were presumed to have a neutralizing effect (Isaac & Michael, 1971:16). No attempt was made to consider such variables.

(4) Teaching is an interactive process, not limited merely to persons, but also directly influenced by resources, environment, and curriculum. The paradigm of education developed for this study presents the elements which interact in open-space settings.

(5) The nature of open-space settings requires instructional strategies and use of facilities different from those in enclosed classrooms. Observation and teaching in open-space schools should assist the teachers and the student teachers in the present study to identify such differences.

(6) Teacher preparation has both practical and theoretical components. The use of actual school settings to impart theoretical content enhances the understanding of the latter.

DEFINITION OF TERMS

The terms used in this study were defined as follows:

Open-space: An architectural term referring to a structurally open, large instructional area with no permanent interior walls or divisions separating several teaching stations. It is a term synonymous with open area.

Open-plan: An instructional term indicating a school in which the instructional program and timetable are extremely flexible or open.

Open education: An integrated and personalized educational process stressing child-initiated activities, intense involvement and self-directed, responsible learning. There are few subject barriers and few restrictions on time and space.

Environment: The observable, physical, and social attributes of the instructional setting.

Teacher preparation: An inclusive term indicating the pre-service and in-service activities available to those furthering their professional development. Typically, this preparation has included a general academic program, a specialization in a subject discipline including the development of the skills and methodology associated with that discipline, a specific professional education program, and a period of teaching practicum or internship.

Student teacher: The person engaged in a pre-service program of teacher preparation. It is a term used synonymously with student in a teacher preparation program. The term pupil is reserved for children in schools.

Co-operating teacher: The certificated teacher in the school to whom the student teacher is assigned during periods of teaching practicum.

Teaching practicum: For this study, the periods of two or three consecutive weeks when the student teacher observes and teaches in a particular school and during which time the other components in the teacher preparation program are suspended.

Undergraduate students: For this study, third year education students, enrolled in a four year Bachelor of Education degree program, who previously observed in several different schools are designated as undergraduates. This third year of the program is devoted to integrated professional studies with a team of instructors. The practical school experiences are planned in sequence to complement these studies.

Graduate students: For this study, persons holding approved degrees from faculties other than Education, who have no previous teacher preparation, are designated as graduates. These graduates are enrolled in a one year professional diploma-after-degree program. The group of graduates in this study were assigned regular experiences in open-area schools for one-half day each week, in addition to their normal teaching practicum periods.

Curriculum: This term is used to denote the general statement about the pre-planned and structured series of intended learning experiences envisaged for a course or program.

Curriculum Resource Unit: The written resources prepared by the researcher to develop an awareness of open-space settings are, in the present study, referred to as the Curriculum Resource Unit.

DELIMITATIONS

Two delimitations were placed on the research:

(1) The study was delimited to two groups of student teachers attending two Curriculum and Instruction courses within a Faculty of

Education, and to co-operating teachers in seven open area schools assigned to these two groups for practical experiences.

(2) The curriculum resource unit was delimited to use by the teachers and student teachers during practicum experiences. Subsequent modification of the unit may permit its incorporation into any preparation where practical experience in open area schools is available.

LIMITATIONS

A number of limitations apply to the present study:

(1) No attempt has been made to consider the multiplicity of courses available within a teacher preparation program, nor of their relationship to the curriculum resource unit which has been developed.

(2) The extent of the co-operation of the staffs in seven schools to assist in modifying the suggested unit, as well as permitting the student teachers to undertake the activities suggested in the unit, was not uniform.

(3) The nature and quality of the feedback provided by individuals during interviews was dependent on their own personalities, as well as on their reaction to the study and the skill of the researcher to elicit responses.

(4) The period of time during which the study was feasible curtailed the involvement of the researcher in each school--both in the planning stage and in the operation of the unit during the

practicums.

(5) The researcher was involved in teaching and liaison with the subjects, although he was not concerned with their formal evaluation.

(6) The curriculum resource unit was presented to the subjects without alteration, thus limiting the reactions of the groups to the one unit, rather than to modifications suggested by other groups.

ORGANIZATION OF THE STUDY

This chapter establishes the background to the research and describes the purpose of the study.

The conceptual framework, with particular reference to selected literature on teacher preparation, open-space schools, and curriculum development and evaluation is presented in Chapter 2.

The research design, with brief descriptions of the subjects and the settings, forms the basis for the third chapter. The five instruments, the preparation of the curriculum unit, and questions of validity and reliability are also outlined in Chapter 3.

Two chapters are devoted to analysis and discussion of the findings: Chapter 4 concerns the findings related to teacher preparation, Chapter 5 considers those findings associated with the curriculum unit and open-space.

The final chapter deals with interpretation and implications of the research. Questions are raised about the content and format of the curriculum resource unit, the processes involved in developing a curriculum unit, the importance of feedback monitoring, and the nature of teacher preparation for open-space schools. The chapter concludes with a series of recommendations.

SUMMARY

Teacher preparation for open-space schools is a need felt by student teachers, teachers, administrators, and university professors. The purpose of this study was to prepare a selected number of prospective teachers for open-space settings through the use of a prepared curriculum resource unit. Assumptions, delimitations and limitations have been outlined, together with an overview of the organization of the study.

CHAPTER 2

RELATED LITERATURE AND CONCEPTUAL FRAMEWORK

This study draws on the literature from teacher preparation, open-space schools, and curriculum development and evaluation. A paradigm of education, incorporating six interacting components, is developed as the basis for the conceptual framework of the study.

RELATED LITERATURE

Teacher Preparation

A program of teacher preparation may use a practical school setting to impart theoretical concepts. Ideally, such a program could provide selection criteria for teachers and students, determined jointly by the preparation institution and by the school administration. Input, process, output, and feedback components could be built into the program model (Yee, 1971). An emphasis on training for specific classroom skills could link various core contents (Berman, 1970; Merrill, 1968b). Observation and practice in specific settings could illustrate roles, responsibilities, and relationships (Garland & Foster, 1972; Musella, 1971).

Research findings. In their impressive review of "Research on Teacher Education", Peck and Tucker (1973) identify seven themes of recent research in North America:

(1) A "systems" or "instructional design" approach. This approach has been shown to improve teacher education effectiveness in both cognitive and affective domains. The research has centered around training teachers in interaction analysis, microteaching, and behavior modification.

(2) Practical applications of theory. Early exposure to classrooms, simulations, games, and interpersonal training experiences suggests that student teachers are likely to adopt a particular style of observed teaching behavior.

(3) Direct involvement in the role to be learned. Self-directed learning produces more effective teaching than remote or abstract lecture experiences. In-service and preservice programs have been developed, many using complex technological devices in personalized, self-pacing instruction or through multi-disciplinary teams of college and school instructors.

(4) Applications of technology. Using various techniques, more self-initiated, self-directed, effective pattern learning has been induced. Human factors continue to dominate research findings concerned with differences in training associated with the characteristics of the student teacher, the college supervisor, and the co-operating teacher.

(5) Student teaching. Ample and impressive research attests to the importance of student teaching, but the effects are often deleterious where programs are ill-defined or co-operating teachers have not been prepared for their role.

(6) Training teachers of teachers. Very little research has been produced on improvement in college teaching.

(7) Pupil learning. Until recently, much research on teacher education sought only to identify teacher behavior as an end product. Linking this behavior with pupil gains in cognitive, affective, or behavioral learning is now receiving increased attention.

In summary, Peck and Tucker conclude that:

> At the pre-service level, well-planned, early involvement in actual teaching seems likely to be available to more and more students. The influence of the most widely favored systems for conceptualizing effective teaching, and the emergence of more effective techniques for training teachers in this direction, both seem likely to accelerate the move toward more active, self-directed learning, both for teachers and for their pupils. . . . Teacher education can no longer remain in a happily ignorant, ineffectual state consisting of romanticized lectures, on the one hand, and fuzzy or unplanned "practical" experience on the other. We are genuinely in sight of the theoretical principles, the operational measures, and even the developmental technology for moving onto a performance-based method of appraising teaching (1973:970-1).

British research in teacher education seems to have given more attention to sociological variables. Lomax (1972) in his review identifies contextual variables (size, professionalism, societal demands, and institutional backgrounds), input variables (personality, attitudes, roles, motivation, and achievement), process variables (environments for learning, curriculum, teaching practice, methods, and student wastage), and output variables (success, and objectives).

Research on teacher preparation, although not prolific, has identified some key areas. North American research seems to have studied technological and situational factors in relating theory to practice. British research has looked at sociological factors linking the preparation to the profession. The present study uses a systems approach based on these research findings for its conceptual framework. Direct involvement in open-space settings applies theory, in the form of a self-instructional curriculum resource unit, to practice during student teaching.

Programs of teacher preparation. The selection of knowledge, skills, and values, and the emphasis placed on each, varies with each preparation program (Denemark, 1963). In the United States Office of Education's models of elementary teacher preparation, each preparation institution asserted its own peculiar needs, and those of its schools, in order to develop realistic curricular objectives (Watts, 1972:23-27).

Joyce (1970) applied a systems-planning approach to identify six planning tasks common to these elementary education models by suggesting that each institution should:

(1) develop a performance model to conceptualize the goals of the program,

(2) analyse this model into sets of behavioral objectives covering specific domains and sequential behaviors,

(3) develop components and strategies,

(4) create interlocking relationships among the components,

(5) develop management systems to adjust to individual differences, to provide for revision, feedback and evaluation, and to integrate component and support systems, and

(6) reconcile the program and its product with the client and the field.

This same "systems" theme in teacher preparation is emphasized by each author in the monograph compiled by Haefele (1971). The application of systems theory to education is being developed through technologically refined instructional strategies for teacher preparation programs (Banathy, 1968; Merrill, 1968a, 1968b; Merrill & Boutwell, 1973).

Monson (1969) and Reddick (1971) also reviewed the model programs seeking commonalities and weaknesses. Reliance on technology, earlier student teacher experiences with children, and co-operation among teacher education institutions, schools, and media were advocated. The use of laboratory and simulation situations, microteaching, and internships, individualization and flexibility, performance criteria and behavioral objectives, inservice follow-up, and differentiated roles for school and college staffs all seemed to be stressed. The elementary teacher education models, however, did not provide for community involvement, student involvement in planning and evaluation, specific programs of in-service for teachers, nor for early childhood education.

A different type of program design was developed by the American Association of Colleges for Teacher Education (1968). A sequential course pattern may be based on five areas: analytical study of teaching, the structures and uses of knowledge, concepts of human learning and development, designs for teaching-learning, and the demonstration and evaluation of teaching competencies. The sequence suggested by the Association includes:

> Elements of perception and differentiation, organization and reorganization of conceptual structures, exploration of alternatives, and opportunities for tryout and feedback. . . . Teaching activities have been utilized as the integrative element for the structure of the content. . . . Faculties would do well to review content from three major sources: (a) the disciplines of philosophy, sociology, psychology, history, etc.; (b) research in communication, teaching and teaching behavior, media, group processes or dynamics, learning, development, etc.; and (c) empirical sources and experiences for additional or revised content. A persistent problem is the identification of the competencies and concepts to be included as essential at the preservice level or in graduate study in education (American Association of Colleges of Teacher Education, 1968:31-32).

Two approaches to program development in teacher preparation may be distinguished. The systems approach, using technological strategies, seeks integration of course components with field experience. The sequential approach retains the traditional course structure. While the present study favors a systems model, it is delimited by use within formal course structures.

Theory-practice. The teaching-learning experiences of student teachers are assisted through their own active involvement in their preparation programs. Denemark (1963:26) suggests that in teacher preparation:

> Teaching methodology, the materials and resources used, and the environment in which the teaching takes place are so closely interwoven as to be inseparable; each affects the others and helps to fashion the procedures developed.

This implies not only that the methodology, methods and resources for the total preparation program will be integrated, but that student teachers should become interactors, actually practising the strategies which they are learning (Joyce & Weil, 1972a).

The outside-inside approach to teacher preparation, as a developing theory of teaching, suggested by Hilliard stresses not only a teacher-centered rather than a subject-oriented program, but one which starts from "the kind of practical situations and interests which students begin to experience in schools during teaching practice (1971:48)." Hilliard pleads for a tighter concentration of carefully selected aspects of educational theory, directly related to the practical tasks to be experienced by teachers in their first few years in the classrooms.

Increasing the amount of experience in the classroom (Kersey, 1970; Marso, 1971; Moss, 1967), variations in the juxtaposition of time available for theory and practicum (Gardner & Henry, 1968; Lundy & Hale, 1967), and the use of planned observations (Collier, 1969; IDEA, 1968) are but a few examples of the attempts to relate theory to practice. The considerable volume of writing on student teaching, per se, is considered outside the scope of the present study.

Another increasing practice is the clinical approach (Hazard & Chandler, 1972; McIntosh, 1971; Parker, 1971). Moving methods courses off campus and into the school environment where college supervisors become attached to a school, not only to assist student teachers but as consultants to the teacher in-service, provides relevance, responsibility, and a rationale for all concerned with teacher preparation (Moseley, 1973; Walsh, 1970).

> With the concept of a preservice and in-service development center, teacher preparation becomes a continuous process, with the public schools taking their rightful place in preservice programming, while the college is involved in a viable, on-the-job in-service program, though not in the traditional campus-bound way. College faculty members are involved in the instructional program of the schools, and the public school faculty is involved in the previously exclusive domain of the college (Moseley, 1973:411).

Laboratory and simulation experiences in teacher preparation apply theory in a practical setting (Cruickshank, 1971; Tansey, 1969). Learning is situational, therefore, student teachers should learn in the situation in which they will operate (Rivlin, 1965). Rationalizing the clinical approach used at Adams College, Parker (1971:520) states:

> The most effective preparation for any profession occurs when trainees carry out specific tasks under expert supervision in the actual work setting.

The establishment of harmoniously co-operative working relationships between the trainer (the university), the user (the public schools), and the client (the community) is difficult to accomplish (Schwartz, 1973). Dissonance was reduced through the University of Chicago's cadre units which, like the Buffalo Elementary Training program (Fischle & Cooperman, 1973), united new and experienced teachers, administrators, college staffs, and community representatives in planning and implementing the program. Interaction resulted in the development of curricular materials, the sharing of facilities, and the planning of research and evaluation.

Each of these types of activities contributes to the integration of theory with practice. Different localities present dissimilar opportunities for university-school cooperation. But one continuing area of concern in teacher preparation appears to be the teacher-centered program operating largely within a school setting.

Personal factors. Student teachers vary greatly in knowledge, skills, and aptitudes. Not only is it desirable to establish some selection procedures for initial entry to the preparation program, but continuing evaluation is required if capabilities are to be extended. Knowledge of one's own development, as well as skill in analyzing and employing interpersonal relations as an educative force, become valuable components in a total preparation program (Combs, 1968; Joyce, 1968; Merrill, 1968b).

Many teacher preparation programs assume that attitude change is both possible and desirable, and that it will influence teacher behavior (Jacobs, 1968). Self-actualization and awareness of self in the classroom setting become built-in to the integration of theory with practice (Aspy, 1969; Garland & Foster, 1972; Stewig, 1970). For example, the preparation of teachers who are capable of humanizing is basic to the University of Florida's emphasis on the teacher as a facilitator (Blume, 1971; Combs, 1969). In order to change his behavior, the student teacher is placed in a helping, rather than a command, relationship with pupils.

During the preparation period, it also seems desirable to provide, for each student teacher, as much flexibility as possible in the program. Hunt (1972:49) points out that:

> Teacher trainees vary enormously in skill level and in personality, yet most programs for training teachers are designed for an 'average trainee' with few options to accommodate trainee variations. A teacher training program which provides alternative experiences modulated to trainee differences is not only more likely to produce an efficient direct effect, but it will also be indirectly beneficial in providing the teacher trainee an experimental example of what is meant by individualizing instruction and 'meeting the needs of the student'.

However, if the resources are available, the flexibility to meet student differences may be provided by offering a multiplicity of programs, each with a structured content, within a preparation institution.

Another way to cater for personal factors in teacher preparation is through self-study materials. McClain (1970) found that significant changes in an individual's self-concept occurred after self-instructional materials had been used.

The present study allows choice in the selection of the content within the curriculum unit. The curriculum unit directs attention to awareness of the school setting. Combining self-study materials with practical settings caters, to some degree, to the needs of the individual who is preparing to teach in open areas.

Summary. The literature on teacher preparation related to the present study emphasizes (1) the application of theory in the practical setting, (2) the provision of programs adapted to the perceived needs of the preparation institutions and the schools, and (3) the choices available within an institution to cater to individual student skills and personality.

Open-Space Schools

In the fifteen or so years since the development of open-space settings, concern has been expressed for construction, design, and facilities, and for instructional strategies to be used by teachers in such settings. The rationale behind the emergence of these schools emphasized the possibilities of meeting individual pupil needs through the use of multiple grouping, individualized instruction, and multi-media resources. Initially, architects critically examined the function and cost of interior walls in school buildings. As criticism of traditional classroom teaching increased, concepts of the roles of pupils and teachers changed. Opportunities for varying class size and pupil groupings, for creating increasingly flexible learning environments, for co-operative staff planning, for better utilization of resources, and for free pupil access to a wealth of learning materials were the major reasons given when open-space schools were constructed (Hersom & MacKay, 1971:11).

Philosophy. The philosophy inherent in open-space schools is that space is an influence on the interaction of teachers with pupils. As with the applied concept of open education, the emphasis is on individuality, flexibility, and adaptability, so that pupils develop their own attitudes, beliefs, values, and behaviors supportive of the open society (Eberle, 1969). But open-space is essentially an architectural facility for learning. As a teaching aid, accessible or open space refers to:

> Those areas within school buildings which lack interior partitions and, hence, have eliminated or reduced the amount of visual and accoustical separation between teaching stations and classroom areas (Hersom, 1971:6).

Open-space facilities may provide a more convenient setting for open-plan programs such as non-grading, individually prescribed instruction, programmed learning, contract learning, flexible scheduling, and the integrated day. But it is important to appreciate the distinctions between the three terms: open-plan (instructional), open education (philosophical), and open-space or open-area (architectural). Open-space is, therefore, the location in which the instructional and philosophical concepts can be applied.

Research findings. Team or co-operative planning and teaching are often characteristic of open-space settings (Meyer, Cohen, et. al., 1971). Open-space settings have been observed to be more active than conventional classrooms (Leuders-Salmon, 1972); they also appear to be less distracting to the children and have a lower noise level than enclosed classrooms (Brunetti, 1971). Some teachers in open-space settings have expressed considerably more satisfaction with their job than have those in conventional classrooms (Brunetti, 1971). Other teachers, in Edmonton open area schools, preferred not to teach in open-space environments exclusively, and felt that they were provided with no option in their assignments to such schools (Hersom & MacKay, 1971:23-26).

The physical, psychological, and social influences of the environment are slowly being researched (Dempsey, 1972; Drew, 1971; Sommer, 1969). From their case study of the prototype of open-space schools at Kensington, Smith and Keith (1971:171-208) analysed the major dimensions (openness, privacy, freedom), the organizational aspects (openness, role-making, formalization, proximity, patterns of movement, flexibility in physical facilities, and variety of spaces), and instructional aspects (openness to extraneous stimuli, density, and retrievable physical stimuli). Their conclusion was that:

> The intricacies of the relationships among building design, material props, administrative leadership, staff organizational patterns, curriculum, and teaching styles have only begun to be sketched.

From these general studies of environmental influence on behavior and from research on perceived reactions in open-space schools (e.g. Brunetti, Cohen, Meyer, & Molnar, 1972; Cheek, 1970; Kyzar, 1972; Molnar, 1971), it is evident that the open-space environment seems to produce some pupil responses and organized behaviors different from those in conventional classrooms (Council of Educational Facility Planners, 1971). This implies that, for optimum effect, teachers must also organize, prepare, teach, and behave in manners and roles different from those used in enclosed classrooms (Kyzar, 1972).

The open-space facility, therefore, makes different demands on its teachers: diagnostician, strategist, co-ordinator, risk-taker, and innovator are all terms which might apply to the teacher in this new environment (Eberle, 1969; Hersom, 1971). If the physical setting itself influences the teaching-learning activities (Dollar, 1972), it is increasingly important that teachers be prepared adequately to move into such radically different teaching situations (Kyzar, 1972).

Characteristics. Open-space schools vary considerably in architectural design, material facilities and resources, and the use made of the physical setting.

The contribution which architecture can make not only to the physical but to the social, psychological, and emotional setting in which teaching-learning occurs has only recently been recognized (Ackerman, 1969; Broadbent, 1970). Baas shows how buildings can be adapted for different environmental settings with particular emphasis on open-space schools (1972b).

Although Bumbarger (1972:15) draws attention to two basic types of open-space--the pod of "grouped spaces providing areas housing some sub-units of a schools' total student body," and the loft where the "entire area under room is left as nearly unobstructed as possible"--both configurations are commonly found. The simplest versions are "eggcrate" room arrangements with intervening walls removed. Spiral or "snail-like" structures are relatively common, as are octagonal or hexagonal designs.

The facilities in an open-space setting are generally moveable and adaptable. Carpet, acoustic tiling, baffle ceilings, and heavy drapes are devices used to absorb noise and have become "standard" features of open-space areas. Light-weight, individual tables and chairs, personal trays for books, moveable cloak racks, chalk-boards, pin-boards and cupboard combinations all assist movement for pupils and teachers (Smith & Keith, 1971). Instructional or multi-media centers are often an integral feature of the open-space environment, providing easy access to multiple resources (Weidrick, 1973a).

The use of these designs and facilities varies greatly. At best, the school building is seen as a catalyst in the learning process (Baas, 1972b:2). The building permits considerable movement of children across age-grade boundaries. Individualized instruction, multiple grouping, and parent and community involvement in a school organization based on learning rather than instruction are encouraged by these settings. Such patterns are apparently operating successfully in some places in Britain (Hood, 1972), in various parts of North America (Council of Educational Facility Planners, 1971; Perrone, 1972), and in some Australian States (Thomson, 1972). At the other extreme, the building facility is virtually negated by the erection of "temporary" partitions which reduce the area to semi-enclosed individual classrooms. At least one report (Hersom & MacKay, 1971), as well as observation by this researcher, indicates that open area schools in Edmonton gravitate toward this latter position.

Criticisms and commentaries. The areas of criticism focus on noise, discipline, and loss of teacher freedom (Stolee, 1970); cost, lack of flexibility, inadequacy of facilities, lack of time and resources for effective teaming, pupil movement, and poor staff co-operation (Anderson, D. C., 1970, 1972); pupil and teacher anxiety, overcrowding, and loss of personal space (Drew, 1970); erection of temporary barriers, lack of utilization of resources, little co-operative teaming, poor acoustics and storage, and inadequate or non-existent in-service preparation (Hersom & MacKay, 1971).

But each of these criticisms is an outcome of the use made of the setting, rather than of the setting itself. Those who praise the spatial environment select the same features (Anderson, 1971; Brunetti, 1971; Eberle, 1969; Ingalls, 1969). Family or varied grouping, the concepts of an integrated day and an integrated curriculum require different teacher roles and change in basic school philosophy (Berson, 1971; Short, 1972). Descriptions of two Calgary schools (Calgary Designs for Change, 1968; Traditional Classroom--Never, 1971) illustrate the positive aspects of space utilization. Hersom (1971) maintains that accessible space is a teaching aid around which curricular innovation can be implemented through the acceptance of the teacher's changed role. Greater responsibility and demands are placed on teachers in an open environment, with a consequent need for more adequate preservice and inservice preparation (Hood, 1972). The instructional media center and the variety of facilities and resources available to children are seen as assets in open-space schools (McNutt, 1969; Meyer et. al., 1971; Nicol, Holden & Miller, 1967; The New Learning Environment, 1969; Wiedrick, 1973a). The freedom provided for children to use space, groupings, and time, particularly through a philosophy of open education, characterizes British experiences with open-space (Palmer, 1971; Pearson, 1972). While expressing concern over individualization and open-space, R. A. Anderson (1970) also sums up much of the philosophy on open-space with the objective "not to train human components for an industrial society, but to educate, truly educate, people as individuals." To the extent that this is being achieved in some schools, open-space is a dynamic agent in the learning process (Council of Educational Facility

Planners, 1971).

Summary. Open-space schools are distinguished from conventional classrooms by at least five features (Brunetti, 1971; Walberg & Thomas, 1972):

(1) a spacious environment which permits change in the organization patterns and use of space at any time,

(2) flexible physical, social, and instructional arrangements through variable pupil groupings and individualization,

(3) the better use of staff time and talents through co-operative planning and teaching,

(4) the location of instructional media and the free movement of pupils to select and use learning materials,

(5) and a physical organization conducive to change because it permits experimentation and innovation.

Curriculum Development and Evaluation

Curriculum development, in simple terms, is the process of developing a plan for learning. It may include the planning of objectives and of instruction (Hammond, 1971). Innumerable forces operate on this curriculum development: social and economic factors, groups and individuals, powerful ideas and products (McNeil, 1969); the needs of society, teachers and pupils, the learning process, and the nature of the disciplines (Fox, 1972). Johnson (1969:6-8) distinguishes between curriculum design as the planned product, and curriculum development as the planning process. The product of this development process is, therefore, the curriculum itself (Johnson, 1970:27); that is, the "structured series of intended learning outcomes (Johnson, 1967:130)." A further distinction is made by the use of this product as a guide to instructional planning, where curriculum and instruction are clearly differentiated (Johnson, 1970: 27).

Johnson (1970:33) identifies some of the variables in the curriculum development process. Dependent variables are those related to productivity, criteria, and adequacy. The independent variables include the development procedures, the level of the process, participant characteristics, and the order in which criteria are applied.

Gooler and Grotelueschen (1971) suggest that while it is necessary to focus attention on the interests, contents, and methodologies in a curriculum unit, it is also desirable to obtain direct, pertinent feedback from the variety of audiences most concerned with the curriculum product. "Curriculum development may be seen as a series of decision points at each of which an alternative, or combination of alternatives, is selected by some process (1971:28)." The interaction of ideas, occurring over time, is the crux of curriculum development (Figure 1).

At the post-secondary level, it is probable that both curriculum development and instructional implementation are carried out by the professor or instructor in charge of each course. This is more apparent if Taba's (1962:12) process of curriculum design is considered: (1) diagnosing educational needs, (2) formulating objectives,

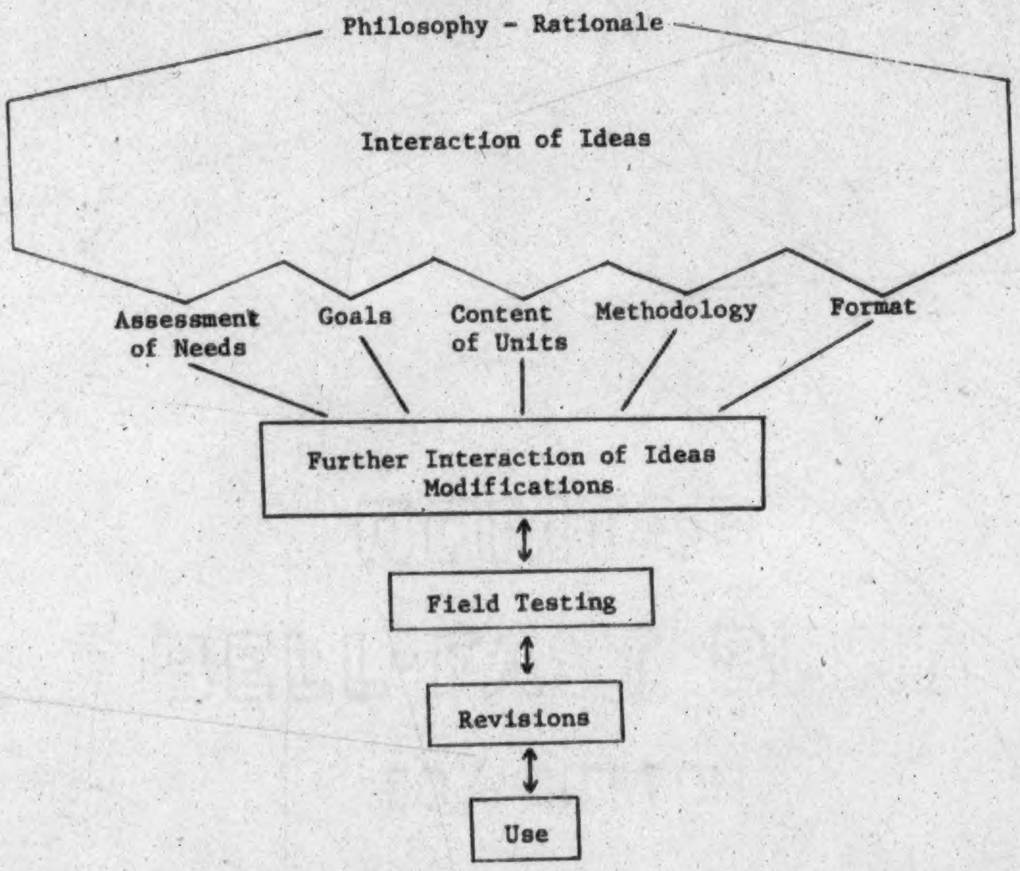
Philosophy - Rationale
Interaction of Ideas
Assessment of Needs
Goals
Content of Units
Methodology
Format
Further Interaction of Ideas Modifications
Field Testing
Revisions
Use

Figure 1: The Process of Curriculum Development
(Adapted from Goolen & Grotelueschen)

(3) selecting content, (4) organization of content, (5) selecting learning experiences, (6) organization of learning experiences, and (7) determining the ways and means of evaluating the effectiveness of what is taught. At the school level, persons other than the implementing teacher usually prepare the basic curriculum plan. The teacher modifies this curriculum as it is translated into

instruction (Friesen & Holdaway, 1973). In tertiary education, the professor is designer, implementer, and in some cases, evaluator. In teacher preparation in particular, it is also realistic to relate these roles to those of the co-operating teachers in the schools, so that both the professors and the teachers may have joint responsibilities in planning and implementing the preparation. Thus, teacher preparation should be considered as a curriculum-instruction system.

Evaluation. Evaluation activities are concerned with measurement and/or value components (Taylor & Cowley, 1972:5). Evaluation is "a procedure for discovering the extent to which previously determined aims are being achieved (Pidgeon, 1972:15)." Evaluation of a program or a curricular innovation seeks answers to such questions as the following: Does the program work? How well does it work? Does it work better than some alternative? (Koopman, 1971:49).

A variety of models has been propounded to assist evaluators. Some use a set of objectives as their criterion while some permit unanticipated outcomes.

The Stufflebeam model requires a consideration of context, input variables, the process, and the product. Any one may be emphasized more than the others. This model seems particularly flexible and appropriate for on-going program evaluation (MacKay, 1972). Stufflebeam's definition of evaluation has widespread generalizability (1971:40):

> Educational evaluation is the process of delineating, obtaining, and providing useful information for judging decision alternatives.

Provus (1969) has developed a discrepancy evaluation model (1971), which utilizes an action system containing a feedback loop. He applies this to the four stages--definition, installation, process, and product--of program evaluation to determine whether to improve, maintain, or terminate the program. Discrepancy is identified between the standards and the performance at each stage by asking questions which imply the use of criteria, new descriptive information, and decision-making.

Curriculum evaluation requires collection, processing, and interpretation of data about a particular educational program. Stake has suggested the necessity for two types of data:

> (1) objective descriptions of goals, environments, personnel, methods and content, and outcomes; and (2) personal judgments as to the quality and appropriateness of those goals, environments, etc. (1967:5).

The evaluation of the curriculum developed for the present study requires both types of data. Furthermore, the formative and the intrinsic aspects of evaluation are considered.

Formative evaluation as opposed to summative evaluation is used to improve curriculum during its development rather than as a final judgment of it as a teaching instrument (Ahmann, 1967:87). Cronbach (1963) emphasized evaluation for course improvement rather than end-product appraisal.

Scriven adopted the term "formative" to describe evaluation used "to discover deficiencies and successes in the intermediate versions of a new curriculum (1967:51)." Scriven (1972:184) also draws the distinction between the evaluator who, through becoming involved in the development process, is exercising judgment at the formative stage, and the evaluator independent from the project, who is brought in to conduct a summative analysis. Scriven also argues in favour of "goal-free" evaluation, so that unintended side effects are not rejected by a "blinkers" approach to the project. Scriven uses the term "intrinsic" to refer to an appraisal of the teaching instrument itself rather than to its effects on pupils (1967:53-55). Intrinsic evaluation requires the formulation and assessment of intermediate goals, and this in turn requires external judgments of the alleged goals, and of the actual content of the teaching instrument itself.

The role of the evaluator, either as an agent involved with or external to the curriculum, becomes crucial in the development of new curricula. An evaluator should be able to consider the quality and appropriateness of stated (or implicit) goals, to delineate alternative goals, to be aware of and take cognizance of various audiences, and to identify alternative means for accomplishing goals all as priority issues in planning for curriculum development (Groteleuschen & Gooler, 1971/72:9-11).

Summary. Curriculum development is viewed as a process requiring feedback. The interaction of ideas among the teachers who may use the curriculum product is the essential feature of this development process.

Evaluation, whether undertaken during the curriculum development process or on the end product, is an assessment involving measurements and value judgments. Both formative and intrinsic evaluation of the curriculum resource unit are deemed necessary in this study.

CONCEPTUAL FRAMEWORK

Paradigms

Paradigms are models, patterns, or schemata used to represent ways of thinking or patterns for research. Paradigms have two characteristics: generality and representation (Gage, 1963:95). Several paradigms relevant to teacher preparation, open-space, and curriculum development are discussed before a tentative paradigm is proposed.

Lewin (1951) explained behavior (B) in terms of a functional relationship (F) between the person (P) and environment (E), thus: B = F (P, E). Lewin devised a schema of the two-dimensional space in which each individual moves. As the individual develops, his life-space becomes increasingly differentiated by the forces operating in the "field" of his environment. To observe and describe behavior adequately, Lewin believed it was necessary to describe only those facts, conscious and unconscious, that make up the field of the individual at the moment of observation (1951:62). He stressed observation of the individual in a real-life situation. Lewin implied that it is necessary to consider each teacher, as well as each pupil, as an individual operating in a particular psychological environment which exerts many different forces on his life-space.

Horowitz (1967:28-29) drew attention to the interaction occurring among each of three components--teacher (T), learner (L), and content (C)--in any particular environment (E). The direction of the vectors, and therefore the emphasis of the interaction for each component, determines the nature of the activity (Figure 2).

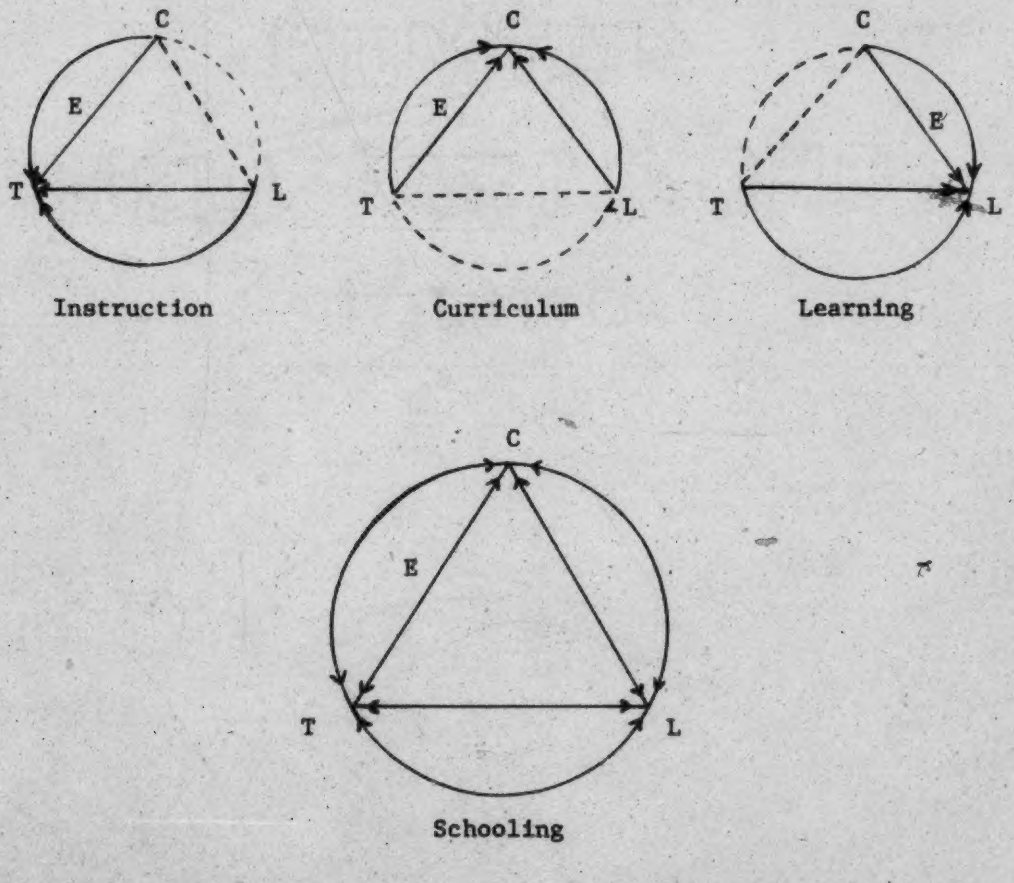
C
E
T
L
Instruction
C
E
T
L
Curriculum
C
E
T
L
Learning
C
E
T
L
Schooling

Figure 2: Interaction in Models of Schooling
(Horowitz, 1969)

Schooling is probably synonymous with Maccia's (1972:6) view of instruction. The same four components--teacher, learner, curriculum, and setting--are used by Maccia in describing instruction (or the teaching-learning process) as "someone teaches something to somebody somewhere." Maccia claims that curriculum is the content of instruction and is subsumed by it. She argues that Johnson's definition of curriculum as "a structured series of intended learning outcomes (1967:130)," is inadequate because it is a product-oriented, anticipatory definition in which curriculum is pre-instructional only and thus immune from interactions. Maccia suggests that "The planning of the teacher is a part of instruction, as is the learner's realization of the objectives of instruction (1972:10)." She sees curriculum being formed from the "symbolic content of culture" and acted upon by the teacher, learner, and setting. In this way it is a component of the instruction (Figure 3).

Maccia also emphasizes the interrelationships among elements of the content of the culture, that is, the curriculum content, with the influences of the setting, the interests of the teacher and of the learner to produce specified curricular content. Runkel's paradigm (in Gage, 1963:126-127) is concerned with four basic elements--the acts of pupils and of teachers, and the frame-of-reference filters of each--and also includes the personal history, goals, and environmental influences of both pupils and teachers. The model indicates clearly that feedback is possible through external and interpersonal systems.

The paradigms, previously outlined, identify four elements in

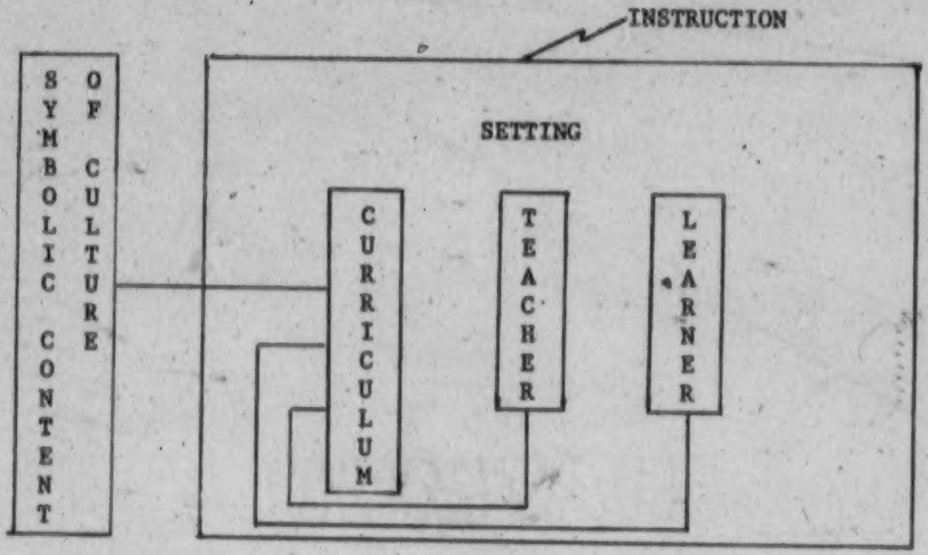
INSTRUCTION
SETTING
SYMBOLIC CONTENT OF CULTURE
CURRICULUM
TEACHER
LEARNER

Figure 3: Curriculum as a Component of Instruction (Maccia, 1972)

schooling, and draw attention to the modifying influence of feedback on the interaction among these elements. The paradigm which follows was developed by the researcher; its six elements have been applied to the dual curriculum-instruction systems which exist during teaching practicum.

A Paradigm of Education

Education involves interaction. The school is an institution providing the physical setting in which teaching and learning can occur. Formal education, therefore, may be viewed as an interaction among six elements: (1) teacher, (2) learner, (3) setting,

(4) resources, (5) curriculum, and (6) instruction. The use of elliptical areas in Figure 4 suggests both fluidity of movement and continual change in the proportions of the elements. Together, these six elements form a system with each element contributing general feedback. The system is continually in a state of flux. The effectiveness of the system depends on the contributions of each interactive element.

The teacher is responsible for the planned learning experiences; the teacher initiates interaction in formal schooling. The extent of the interaction varies in time and space for each element. This flexibility is central to the paradigm. Teaching is therefore seen as a process of interaction among the teacher and other elements which initiate, continue, or retard change in the learner.

The paradigm places instruction at the centre of formal schooling; it is both the product of, and the vehicle for, interaction. Instruction is not limited to the formal teacher-learner didactic; it occurs whenever any of the elements interact with the learner.

The learner is any person receptive to any interaction either with another person, or with himself, or with resources, curriculum, or setting. The setting includes the people who normally inhabit the physical environment in which teaching-learning occurs. The resources are human, temporal, and material.

The curriculum in this representation is not a static statement of intents, but a plan which is adaptable to the needs and

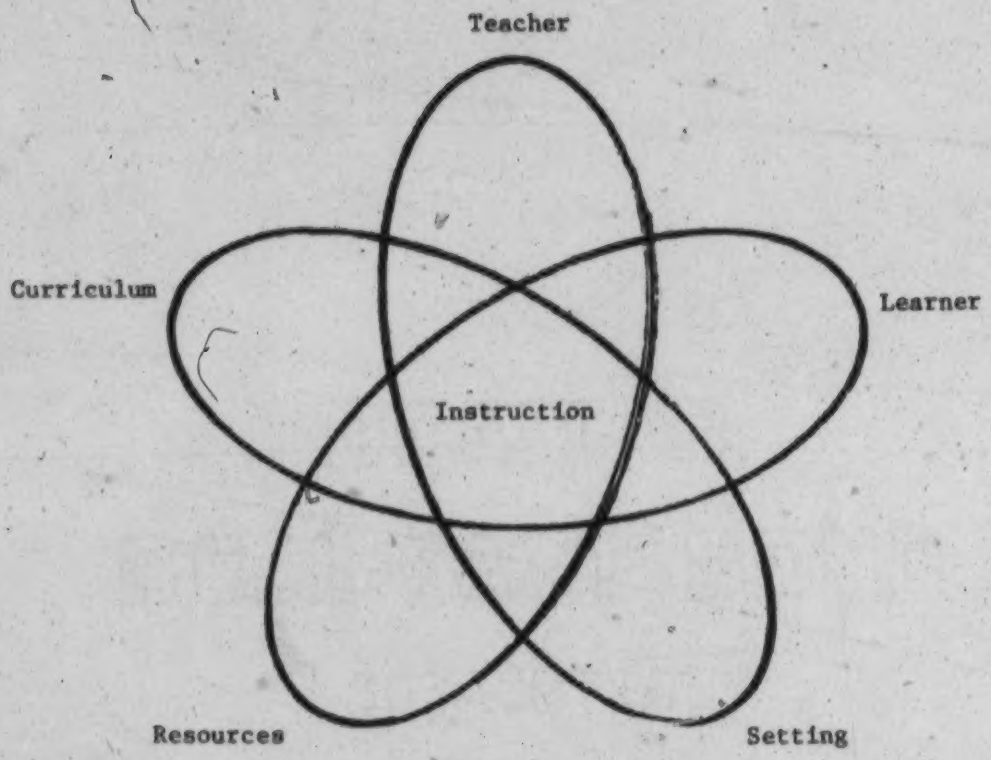
Teacher
Curriculum
Learner
Instruction
Resources
Setting

Figure 4: A Paradigm of Interacting Elements in Education

pressures of the learners and which the teacher modifies or selects. It is an integral segment of the interactive process of schooling.

The teacher and the learner bring a multitude of attitudes, beliefs, skills, and knowledge to the interaction. Feedback allows for the adaptation of the system to the society of which it is a part. In such a cybernetic system, each element is a source of influence, and each contributes to the educative process.

The six elements apply to formal schooling at any level and in any situation. For the purposes of the present study they may be adapted to teacher preparation and/or to open-space schools. Just as interaction is basic to the operation of the paradigm itself, this study assumes that interaction between the university component and the school or open-space component is basic in developing a curriculum to prepare teachers for open-space settings.

The process of preparing teachers is integrated, complex, interactive, and practical. Several types of curriculum units could constitute a component of a teacher preparation program (Figure 5). The present study is an attempt to identify some of the concepts appropriate to open-space teaching which could be incorporated into a curriculum for teacher preparation.

A Framework for the Study

In the practical preparation of teachers, the student teacher becomes part of two sets of curriculum-instruction systems: one in the teacher preparation institution, the other in the schools. This

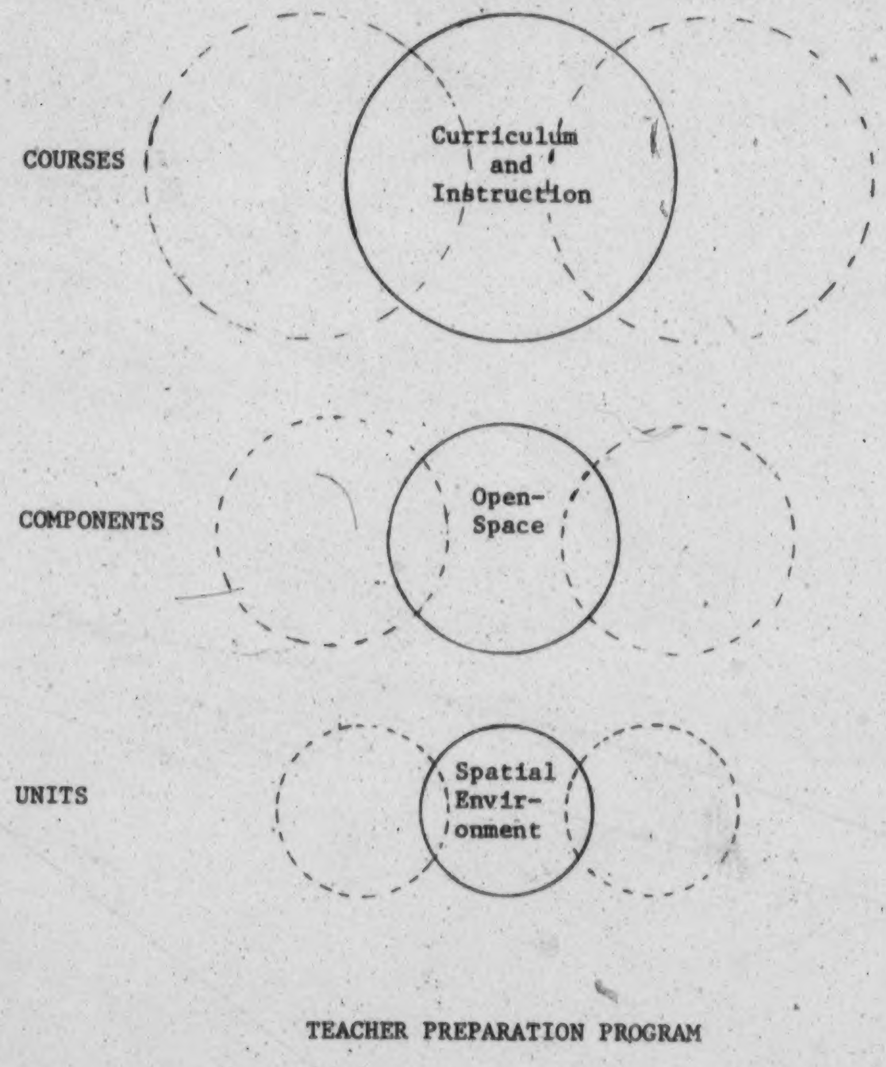
COURSES
Curriculum and Instruction
COMPONENTS
Open-Space
UNITS
Spatial Envir-onment
TEACHER PREPARATION PROGRAM

Figure 5: Elements in a Teacher Preparation Program

is most clearly in evidence during teaching practicum experiences, but it also may be assumed to operate with varying degrees of influence throughout the total period of the teacher preparation program (Figure 6).

The present study takes into account these two distinct curriculum-instruction systems. The instructional setting selected was open-space schools, on the premise that the learning experience would be more effective if undertaken in the setting to which it pertained. It is acknowledged that the school curriculum will be affected by the presence of student teachers and professors in a classroom setting. Similarly, the university curriculum will be adapted and defined in relation to the school's activities when it is implemented in school settings. This is not to deny different, appropriate objectives for each, nor does it suggest that the outcomes of the curriculum unit will be similar for student teachers and for pupils. Nevertheless, a basic tenet of the study is that each element in an instructional system interacts with every other element, and the effects of these upon one another cannot be overlooked.

By recognizing, in the first instance, that two separate curriculum-instruction systems exist and contain similar interacting elements, it is possible to unify a number of the aspects of each system to generate a new, combined system. Following such recognition, the new system may then be planned jointly by the co-operating teacher and the teacher-educator. The curriculum content will then include parts specific to the student teacher's university courses, and certain features peculiar to the pupil's school experiences. Both

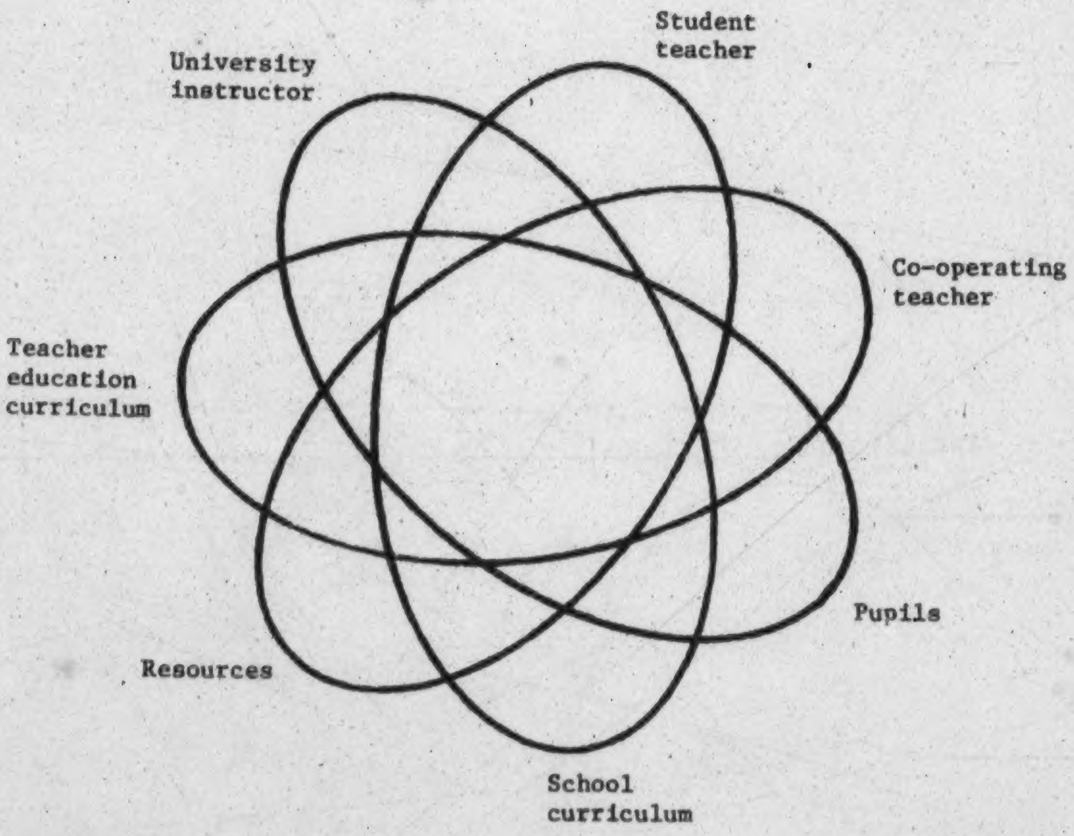
Student teacher
University instructor
Co-operating teacher
Teacher education curriculum
Pupils
Resources
School curriculum

Figure 6: A Model of Interacting Elements in a School Setting during Teaching Practice

will be accommodated in the teacher preparation curriculum.

Teachers and student teachers bring their own interpretations to these curricula. Thus, there are some learnings which both student teachers and pupils may undertake on their own. There are also some learnings that are common to both student teachers and pupils. On some occasions the student teachers and pupils may wish to interact independently with the professor and teacher respectively. The curricular content for the school and for teacher preparation, the physical facilities of the open-space setting, the resources available in that setting, and the instructional strategies employed, all contribute to the complexity of the interaction.

The present research seeks to utilize this framework of two interacting curriculum-instruction systems. The semi-self-instructional curriculum unit on the spatial environment provides the content. The focus of the research is the student teacher, not the pupil, in terms of the awareness of open-space provided by the unit.

SUMMARY

The description of the conceptual framework for the study has brought together some of the paradigms developed by educational theorists which bear on interaction in the teaching-learning situation. The development of a proposed paradigm of education incorporating six basic elements: teacher, learner, setting, resources, curriculum, and instruction, has resulted. The adaptation of this paradigm to the two curriculum-instruction systems in open-space schools during teaching practice has provided the framework for the study.

In order to provide background for this study, a review of the related literature on teacher preparation, open-space schools, and curriculum development and evaluation was presented. This review focused on those elements in each area which stress interaction in a practical situation.

In the next chapter the research design is outlined. The development of the instruments is described, together with the conduct of the study. Questions of reliability and validity are considered. The chapter concludes with a description of the procedures used to analyze the data.

CHAPTER 3

DESIGN, INSTRUMENTATION, AND PROCEDURES

This chapter describes the components of, and settings for, the research and the three phases of the research plan. The development and validation of the instruments are outlined. The procedures used for distributing and retrieving materials, and for processing and analyzing the data are reported.

RESEARCH DESIGN

The research design evolved from the literature reviewed, and through supervisory activities in open-space schools. The need for more information about improving teaching in open-space environments for student teachers and practising teachers was apparent.

Subjects

Subjects from three groups were asked to participate in the study. The subjects were selected because each group was working in open area schools. Two groups were student teachers at different stages of preparation; the third group was composed of co-operating teachers in the schools to which the student teachers were assigned.

Graduates. Twenty-nine student teachers in a professional diploma for degree holders had elected to spend one half-day per week in an open area school as teacher assistants, and to take the normal teaching practicum in the same school. Two of the group members eventually transferred to another program; the study was completed using the remaining 27 student teachers.

Undergraduates. Twenty-four third year Education students concentrated their professional courses during one academic year, including many guided practical experiences. The unit on the open-space environment for this study was used as part of one of these practicums. Twenty-one of these student teachers participated fully in the study.

Teachers. The co-operating teachers in the seven schools used by the two groups of student teachers were also asked to participate. Teachers were asked to share in the research by working through the curriculum unit, and to provide comments and suggestions to the researcher. Forty-nine of the 64 teachers returned the evaluation instruments.

Subject Characteristics

The profile for each of the three groups of subjects is given in Table 1. There were four times the number of females to males in the study. Representation from each school was not equally distributed.

None of the undergraduates had experienced open-space settings solely, but two-thirds of them had observed in both open-space and enclosed settings. This contrasted with the graduates, only one quarter of whom had not experienced open-space environments directly. Only two of the graduates had taught for periods up to one year, one

TABLE 1

PROFILES OF SUBJECTS BY GROUP

Category		Graduates N=27	Undergraduates N=24	Teachers N=49	Total N=100
Sex	Male	7	2	12	21
	Female	20	22	37	79
School	1	9	0	10	19
	2	11	0	6	17
	3	7	0	7	14
	4	0	5	10	15
	5	0	6	4	10
	6	0	7	6	13
	7	0	6	6	12
Degrees	B.A.	21	0	9	30
	B.Sc.	5	0	2	7
	B.Ed.	0	0	28	28
	M.Ed.	0	0	1	1
	Others	1	0	4	5
	None indicated	0	0	8	8
Years of Teaching	1-3	2	0	21	23
	4-6	0	0	14	14
	7+	0	0	13	13
Teaching Space	Enclosed	0	0	15	15
	Open-space	1	0	5	6
	Both	1	0	29	30
Student Teaching Space	Enclosed	7	8	36	51
	Open-space	14	0	1	15
	Both	6	16	7	29

in an open-space school and the other in both enclosed and open areas.

The profile for the teachers shows a greater number in the first three years of teaching than in the other categories listed. Only eight teachers (N = 49) did not indicate that they held at least one degree. Though the teachers had taught in both open-space and enclosed areas, they had received their preparation almost exclusively in enclosed settings.

Settings

Seven schools containing both open-space and enclosed classrooms were used in the study. Each open-space was different in design and method of use. The allocation of student teachers to co-operating teachers working in these open-spaces was completely random. Individuals were distributed between both conventional and open-space areas. The student teachers were assigned to grades one through six in each school. The open-space portions of each school were carpeted areas with moveable furniture. In two of the seven schools the media center was not incorporated in the open-space setting. Little team teaching was evident in any school. Moveable partitions effectively divided the open-spaces into single teacher teaching stations in many cases. In three schools at least, two teachers were visible to each other and occasionally shared the teaching of their classes.

The Research Plan

There were three phases to the present research.

The development of the conceptual framework has been outlined in the previous chapter.

The second phase was the development of the curriculum resource unit on the Spatial Environment. The unit provided a structured series of learning experiences, each with its own process evaluation to equip the user with knowledge of his response to the materials and experiences. The plan for this resource unit is indicated in Figure 7. Stage one of the unit was completed in the campus setting. Stages two and three were the responsibility of the co-operating teachers who, with specific suggestions from the unit plan, guided the activities and discussions of the student teachers. The final evaluation of the unit was made by means of interviews and inspection of the participants' logs.

The third phase of the research plan consisted of revision to the curriculum unit based on information received from the participants.

INSTRUMENTATION

Two types of material were prepared for the study: resource material and evaluation instruments.

The curriculum unit on the open-space environment was prepared as the resource material for the study.

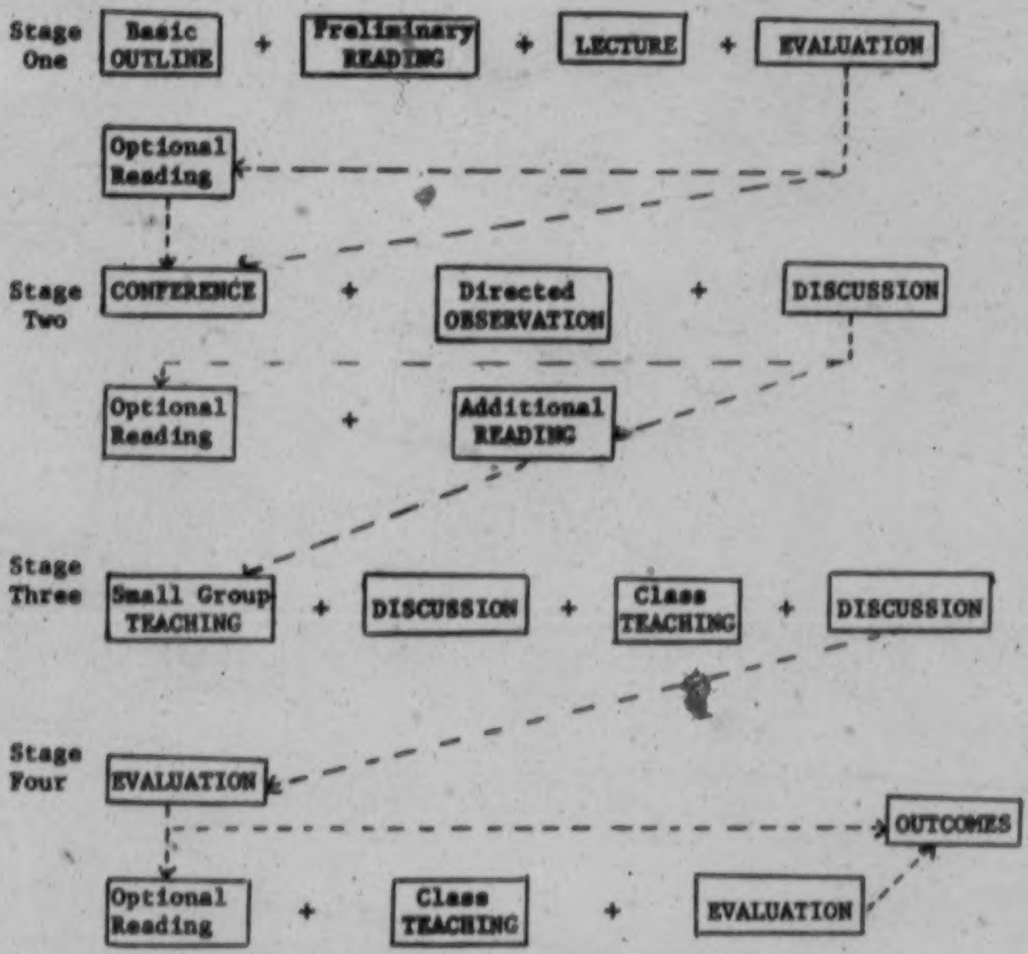
Stage One
Basic OUTLINE
+
Preliminary READING
+
LECTURE
+
EVALUATION
Optional Reading
Stage Two
CONFERENCE
+
Directed OBSERVATION
+
DISCUSSION
Optional Reading
+
Additional READING
Stage Three
Small Group TEACHING
+
DISCUSSION
+
Class TEACHING
+
DISCUSSION
Stage Four
EVALUATION
OUTCOMES
Optional Reading
+
Class TEACHING
+
EVALUATION

Figure 7: Design for The Curriculum Resource Unit

Four paper and pencil instruments were developed. The Professional Preparation Questionnaire (PPQ), The Individual Choice Diary (ICD), Activity Sheets (AS), and the Unit Evaluation (UE) are presented in Appendix B. The PPQ and the UE were opinionnaires requiring responses to specific items on a five point scale. Comments were invited on any of these items. The other two instruments required narrative and/or diagrammatic responses.

Interviews provided the main source of data collected orally. In addition, impressions were recorded by the researcher after informal conversations with participants and with significant others who had some contact with the study. The interview data were generated largely about the unit booklet on the open-space environment. The questions elicited reactions to the curriculum unit, perceptions of how to use self-instructional material to convey theory in a practical setting, general comments on teacher preparation, and perceptions about curriculum development.

Development of the Unit Booklet

The unit booklet was designed to provide self-instruction for teachers and student teachers in school settings. There were three types of material presented in the unit booklet: (1) ten articles on open-space, (2) activity sheets directing observations about the settings, and (3) information to assist the reader to interact with elements in the environment and to relate them to the articles.

The literature available in North America, and to a lesser extent in Australia and Great Britain, was perused. From this review, some twenty-five articles were selected by the researcher because they concentrated on the physical features of open-space settings and/or on their utilization. These articles were reviewed by two people familiar with literature on open-space teaching to confirm the initial selection of the researcher. The final selection of ten articles used the following criteria: some articles which were critical as well as extolled open-space; articles with some Canadian content; articles which reflect research; articles written by practising teachers, and articles which incorporated material not readily available to student or practising teachers. Constraints of bulk and reading time were also considered.

Objectives for the curriculum unit were reflected in the nature of its contents: to acquaint teachers and student teachers with current literature on open-space; to suggest practical observations and activities which would apply the concepts from this literature to a particular school setting; and to provide information and general suggestions to encourage interaction between teachers and student teachers in the use of this curricular resource.

The booklet was also partly self-selective. The intent was to determine which portions of the booklet provided greatest appeal to members of the sample groups.

Development of the Paper and Pencil Instruments

Four paper and pencil instruments were constructed. Personal data on academic qualifications, length of teaching and student teaching, and whether these had occurred in open-space or enclosed settings were collected in the initial instrument.

Professional Preparation Questionnaire. Six sections were developed in this initial instrument.

Section one contained twelve statements based on readings, observations, and informal discussions with teachers, administrators, and university personnel regarding the main features of an open-space environment. Each respondent was asked to indicate his own measure of confidence in, or understanding of, each item on a five-point scale. This section was also used as a posttest after completion of the unit.

Section two consisted of 20 statements designed to elicit the respondents' orientation to teaching in an open-space setting. These statements were adapted from a perusal of several teacher opinionnaires and semantic differentials.

Section three presented six possible reasons why teachers need to be prepared to teach in open-space schools. In the pilot study respondents had been asked to rank these reasons. Based on the experience of the pilot study, a five point scale for each statement replaced the directions to rank order the statements.

Sections four and five sought perceptions of the subjects to statements about open area schools. A five point scale was assigned to each statement.

The final section asked for a preference of teaching environment among four listed possibilities. This section was repeated as a posttest measure in the Unit Evaluation.

Individual Choice Diary. One of the major concerns in the study was the adequate monitoring of reaction to the unit booklet. The Individual Choice Diary was developed to assist in this process. The purpose was five-fold: to obtain some indication of the stage at which each segment of the booklet was attempted; to discover which sections had been selected for serious consideration; to establish the reasons why some sections were omitted; to permit unstructured comment or reaction on each item in the booklet; and to analyze these reactions as favorable or critical.

The format for this instrument was difficult to determine. The final decision resulted in the listing of each item from the table of contents in the unit booklet so that reaction could be monitored. Forty-six items were listed.

Activity Sheets. Eleven activity sheets were incorporated into the booklet and identified by color coding and alphabetic subscripts on pagination. Each sheet or set of sheets followed a specific information section of the booklet.

Three sheets required visual or diagrammatic representations of the environment. Other sheets permitted note-taking under suggested headings. Some sheets were structured as suggested format for lesson plans. Some sheets permitted free response.

The variety of activity sheets enabled the respondent to record impressions or observations about his environment. This was an individual response, unique to each setting.

Unit Evaluation. There were four parts to the final paper and pencil instrument. Two sections (B and D) were repeated from the Professional Preparation Questionnaire for comparison as posttest measures.

Eighteen statements, reflecting some of the concepts and types of material presented in the curriculum unit, were devised for section A. Provision was made for comments under each statement. A five-point scale was used to gauge the effectiveness of specific features of the booklet and to determine which aspects of open-space teaching were not viewed confidently by the respondents.

Section C of the Unit Evaluation elicited free comment on the use of the booklet. The intent was to focus attention on the relationship of theory to a practical setting. This section also requested suggestions for changes in the booklet.

Development of the Interview

Interviews were conducted in two forms: as small group interviews by schools, and as individual interviews. The group interviews included teachers participating in the study from the seven schools, and over eighty per cent of the undergraduates. A table of random numbers (Glass & Stanley, 1970:510) was employed to select twelve graduate students to be interviewed individually.

Timing and location of interviews. The teacher interviews were conducted in their respective schools during lunch hours. There were two exceptions to this procedure: a portion of an afternoon staff meeting of the total staff in each of two schools was devoted to a discussion of the booklet.

The undergraduates were interviewed in the week following their practicum. Five to seven people attended each hour-long interview on campus.

The graduates were interviewed individually in their respective schools during the second practicum in the second term. Most interviews lasted less than thirty minutes. Approximately half the interviews were held after school, and the others were conducted during lunch periods.

Pre-selection of questions. Broad areas on which to base interview questions were selected by the researcher. Sample questions were developed. Interviews were then conducted with two graduates who were not subjects in the study.

From these pilot interviews a number of categories were established in which pertinent questions could be formed. These became the basic categories for the actual interviews: initial reaction to involvement in the study and to the Unit Booklet, the use of a self-instructional booklet in a practical setting, the value of providing sets of readings interspersed with activity sheets, and opinions about the Unit Booklet.

METHODOLOGY OF THE STUDY

The teachers in the seven schools were contacted before the student teachers were introduced to the research. Following official approval for the study, an initial visit to each school acquainted the staff with the general intent of the research. The Professional Preparation Questionnaire (PPQ) was distributed and explained. During the second visit, in most instances, the curriculum unit booklet and the Individual Choice Diary (ICD) were distributed to interested co-operating teachers and the color-coded segments were explained. The completed PPQ was collected. Normally, some time was spent clarifying the dual role of the co-operating teacher as participant in the research and as mentor to the student teacher's implementation of the research during the practicum period. This latter role was apparently not clear to many co-operating teachers. During the practicum the researcher visited each school at least twice in an effort to secure maximum co-operation and clarification on the research. The ICD was collected and the Unit Evaluation (UE) distributed during the last visit within the practicum period. In most cases, when the UE was finally collected from teachers, a general interview discussion was held.

The graduate students were invited to participate in the research prior to their entry into the schools for their first practicum in October. The PPQ was distributed, completed,and collected in a class session at the university. The Unit Booklet was distributed together with the ICD. The lecture presentation was made immediately prior to the three week practicum. During the practicum the researcher visited each of the three schools at least three times. As many student teachers expressed concern at the volume of work involved in the practicum, with resultant inattention to the research, the latter was extended to the second practicum in

March, with the exhortation that it was desirable to attempt the unit during the half-day assistantships each week in the interim. By the end of the second practicum the ICD had been collected, the UE distributed and returned, and randomly selected interviews conducted.

The undergraduate group was introduced to the research prior to the Christmas vacation. The PPQ was completed and the Unit Booklet and ICD distributed. Immediately prior to their three week practicum in January, these student teachers received the lecture presentation. Again, during the practicum, at least two visits were made to each school. On their return to the university the undergraduates completed the Unit Evaluation. Group interviews were conducted during the week following the practicum.

RELIABILITY AND VALIDITY

In Developing the Instruments

Reliability refers to the consistency of the content, and stability, over time, of the measurement provided by evaluation instruments (Isaac & Michael, 1971:89).

The piloting of the materials--the curriculum unit and the evaluation instruments--did not occur at any one time or with the same pilot groups. The informal reactions of teachers, teacher educators, and graduate students not involved in the study, brought modifications to the instruments initially selected.

An "incidents" diary was kept by the researcher to record the progress of the study. This diary reflected early changes to the original intent.

Pilot interviews were conducted with two graduate students not connected with the study. Broad categories for interview questions were selected by the researcher, as already outlined, and sample questions developed. Consistency and stability were maintained, according to the two judges who listened to the tape recorded pilot interviews.

A group of seven undergraduates in a program different from that of the subjects, was given the Professional Preparation Questionnaire. Three weeks later the same group completed the same instrument. This provided a reliability measure on the test re-test over 51 items. The degree of absolute congruence, item for item, was 45 to 82 per cent. On eighty per cent congruence (that is, allowing a variation of one in the five point scale for each item), item for item from pretest to posttest produced a reliability of 94 per cent or above for all subjects.

Validity for the items in the evaluation instruments was established using two panels of three judges. The researcher's selection of articles for the curriculum unit was validated by one panel. The criteria for the selection of the ten articles have already been described. The second panel of judges considered the paper and pencil tests, reporting on the perceived intent and ease of understanding of each item. When two of the three judges queried an item, it was discarded.

In Interpreting the Data

After the data had been collected, the oral and free composition reports were analysed. In this analysis the opinions of the respondents were considered to reflect their attitude to the interview questions and to the items in the Individual Choice Diary.

Individual Choice Diary. For the Individual Choice Diary, each response for each item was evaluated by the researcher as either positive (or in favour) or negative (or critical). In a few instances, responses were ambivalent and were categorized as both positive and negative. One month later, the researcher again categorized all responses, adding a no response or not applicable category. Two doctoral students familiar with, but not participants in, the study worked through the responses and categorized each in order to validate the original interpretations. An arbitrary figure of 70 per cent agreement by the two judges with the researcher was established for each item sampled: all but one item (the graduates' responses regarding Sommer's article) fell within this limit.

Interviews. Similar procedures were adopted for the interpretation of the interview data. The tape-recorded comments were transcribed and categorized for each respondent by the researcher. A graduate teacher and two doctoral students listened independently to sections of the interviews to establish the criterion-related validity of the researcher. Several comments included in some categories by the researcher were deemed peripheral by these judges and were discarded. No alterations to the broad categorizations were made.

PROCESSING AND ANALYZING THE DATA

The data were processed in three ways.

(1) Those items from the paper and pencil instruments which could be coded were prepared for computer analysis. Using programs from, the Division of Educational Research Services (NONP10, ANOV12, DEST07), frequency tables with chi-square measures of difference, correlated t tests for differences between means, and basic statistics on means, variances, and standard deviations were obtained for the personal and content data.

(2) The descriptive data, including comments on individual items, were reviewed and categorized.

(3) The interview data were transcribed in outline and categories were developed for each broad area of interview question.

As already indicated, the categorizations for the descriptive and interview data were independently judged.

Incomplete Data

Personal information, through the Professional Preparation Questionnaire, was obtained for 100 subjects. On this and the subsequent instruments, some subjects did not complete all of the items listed. The findings, however, are based only on completed responses for each item. On the items which were given as pre-test and posttest measures, only responses completed on all items in each measure were used to calculate means and _t_ values.

Interpretation of Data

The six sections of the Professional Preparation Questionnaire used Likert-type scales. Although such scales are ordinal, most researchers employ parametric statistics and treat the categories as interval data.

In the present study the categories on two separate scales labelled "great deal" and "strongly agree" were assigned a score of 5, while "unknown" and "strongly disagree" were rated as 1. On the scale seeking a measure of confidence in, or understanding of, each of twelve statements, the category "unknown" was interpreted as "none".

For the Professional Preparation Questionnaire, section II, the scoring was reversed for five items (8, 11, 12, 14, 17) because each statement was negatively expressed and "disagreement" was the anticipated response.

SUMMARY

In the design phase, the subjects and the seven school settings were described. The three phases of the research plan were explained.

The composition and development of the instruments used in the study were described in detail.

The procedures adopted for validation and reliability, including informal and formal pilot studies, were expounded.

The final section reviewed the procedures for disseminating materials and collecting, processing, and analyzing data.

The next two chapters of this study are devoted to a detailed consideration of the findings. Chapter 4 is concerned with the findings relevant to teacher preparation, including the relation of theory to the practical setting. Chapter 5 reviews those findings related to open-space instructional settings, and to the type of setting in which the subjects wish to teach.

CHAPTER 4

FINDINGS AND DISCUSSION REGARDING TEACHER PREPARATION

The findings presented and discussed in this chapter consider the first sub-problem of the study: To obtain information on the perceptions of the teachers and student teachers regarding the preparation of teachers for open-space settings.

The data have been considered under various headings, each introduced by a question regarding teacher preparation for open-space settings. Under each question, data sources are given, and the findings are described and discussed.

SUBJECTS' ORIENTATION TOWARD TEACHING AND TEACHER PREPARATION

What orientation do teachers and student teachers have toward teaching and teacher preparation?

Data Source

The second section of the Professional Preparation Questionnaire listed twenty statements on teaching and teacher preparation. Each respondent indicated his measure of agreement with each statement. A panel of three judges categorized each statement as instructional, self-concept, or teacher preparation.

Findings

The statements, according to the strongest measure of agreement, have been rank ordered in Table 2.

Three of the five most strongly rated items related to instruction, with the others being categorized as self-concept. Two of these items mentioned children. Only three items (2, 14, 15) were judged by the panel to refer directly to teacher preparation. These items received scores which placed them near the middle when the items were ranked.

Discussion

Enjoyment in teaching children received the most "strongly agree" rating of the twenty items. This opinion was confirmed through the dichotomous response to item 3 regarding enjoyment in working with adults more than with children.

Negatively phrased questions or comparative statements did not seem to receive as definite a response as the positive statements. Such methodological difficulty in the questionnaire was encountered in several items (8, 11, 12, 14, 17) where a negative statement was provided and "disagreement" was the anticipated response.

Items 3, 8, and 9 were the only ones in which children were mentioned. The latter two were in the first four ranked items, tending to confirm that these respondents were primarily concerned about children in their orientation towards teaching.

TABLE 2

ORIENTATION OF RESPONDENTS TOWARD TEACHING AND TEACHER PREPARATION

Items ranked for agreement (PPQ, II)	Numbers of Responses					Total N
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
(9) I enjoy teaching children.	61	38	1	0	0	100
(19) A teacher should seek the opportunity to learn from the techniques of successful colleagues.	45	52	3	0	0	100
(1) Learning the formal material isn't always the most important thing, I need to apply it in the actual situation.	44	51	3	1	0	99
(8) The child's performance in learning is more important than his development as an integrated person.*	0	1	4	59	36	100
(10) It is important to me to do things very well.	33	59	7	0	0	99
(20) Teachers should be prepared to alter their expectations of the role of the teacher.	27	66	6	1	0	100
(7) I try to find something to appreciate in each person whom I meet.	28	62	10	0	0	100
(13) I think that I will need to continue my professional education in-service.	24	65	9	1	0	99
(4) The opportunity to initiate and to try out new instructional ideas is very important to me.	18	61	20	1	0	100
(12) As a teacher I expect to have difficulty communicating and working with parents and community personnel.*	1	5	7	69	17	99
(5) I feel confident that I could work well with other teachers as members of a teaching team.	12	70	15	3	0	100
(11) I do not wish other teachers or administrators to see my teaching styles and techniques.*	0	2	29	49	20	100
(2) I am sure that every intending teacher needs a preparation program fitted specifically to his/her needs and previous experiences.	22	47	22	7	0	98
(14) I do not feel the need to have specific and carefully organized lesson plans.*	2	13	15	55	15	100
(17) I would not be happy if the administrators left me to my own devices.*	0	12	28	46	14	100
(18) Teachers should allow spontaneous movement and conversation in the classroom.	6	47	27	17	1	98
(6) I could teach successfully without textbooks.	3	37	29	31	0	100
(13) It is very important to me to be placed in a school where other teachers and administrators have a great deal to offer me.	3	33	34	19	5	94
(16) I like routine-type activities.	1	14	38	43	4	100
(3) I enjoy working with adults more than with children.	1	3	44	44	8	100

* Items stated or perceived negatively were given reversed scores for ranking.

Instructional techniques also seemed to rate highly in the respondents' orientation towards teaching. So, too, were items which may broadly be labelled humanistic or self-concept: these were the major items identified by the respondents (Table 2).

Differences were evident among the three groups on some items. The graduates were more strongly oriented toward initiating and trying out new ideas (item 4), being left to their own devices (item 17), and being averse to routine-type activities (item 16). The undergraduates were conscious of seeking opportunities to learn from other colleagues (item 19), to do things well (item 10), to develop children as integrated persons (item 8), to have a preparation program fitted to each student's needs (item 2), and to use textbooks for successful teaching (item 6). Both the student teacher groups agreed more strongly with items 1 and 18 than did the teachers.

The teachers seemed to have less definite opinions on these items than did the student teachers. Such reluctance on the part of the teachers may be based on practical experience. The undergraduates tended to be more idealistic in giving strong preferences to items on which the other two groups clustered around "neutral" ground. The graduates, on the other hand, showed a desire to attempt innovative measures on their own. Some of the interview comments from this group reflected this desire to have their own classes so that they might try out many ideas which they had obtained from theory and observation. The comments from the majority of teachers also confirmed that their orientation to teaching was conservative, with little willingness to initiate new ideas, even though they had read about them as practical realities in other places.

The data for this question, therefore, suggest that the subjects place importance on teaching children and that they are concerned with their own self-concepts in being able to learn from their colleagues, to apply materials in practical situations, and to alter their own expectations. The undergraduates seemed to be more dependent and idealistic, the teachers less prepared to express strong views or to emphasize change, while the graduates were oriented to attempt different approaches and to operate independently.

ADAPTING TEACHER PREPARATION FOR OPEN-SPACE

In what ways can teacher preparation be adapted to meet the needs of open-space settings?

Data Sources

Two sources of data were used: the first section of the Professional Preparation Questionnaire (PPQ), and the responses to interview questions.

Findings from the Questionnaire Responses

Lack of confidence in, or understanding of open-space, was expressed regarding a majority of the twelve items in the first section of the PPQ (Table 3). In particular, little or no confidence was recorded by respondents in their understanding of a child's psychological space, group dynamics, the implications of personal space and social space, and team or co-operative teaching. Those items which received greatest measure of confidence were lesson planning and teacher's control and use of voice.

Findings from the Interview Comments

Selected representative interview comments are provided in Appendix C. Interview comments from the subjects clustered around the following areas:

Philosophy of open-space. It was deemed valuable to give equal emphasis to the philosophy of open-space and to the actual setting. The descriptions of open-space provided in the articles in the booklet, and in the theory given on campus, were apparently not consistent with what was happening in the schools used in the study. But the practical setting allowed individual interpretation of the articles. Walking into the practical setting without such information was viewed with trepidation by some respondents.

Practical emphasis. The interviewees were insistent that more time should be spent in the schools. Longer exposure should be provided for different settings. "Theory was good, but talking about interacting with children in an open area was inadequate: you have to do it!" The value of spending one-half day per week in the

TABLE 3

RESPONDENTS' MEASURE OF CONFIDENCE IN PREPARATION FOR TEACHING IN OPEN-SPACE SETTINGS

Items ranked in order of least perceived measure of understanding (PPQ, I)	Numbers of Responses					Total N
	Great deal	Considerable amount	Moderate amount	Little	Unknown	
(8) Child's psychological space.	3	20	36	31	9	99
(9) Group dynamics, especially in open areas.	4	20	34	38	3	99
(6) Implications of "personal space" for children. . .	2	23	41	29	4	99
(10) Social space as a factor in teaching.	2	23	43	26	6	100
(3) Team or cooperative teaching.	6	22	38	29	5	100
(5) Teaching strategies in a spatial environment.	5	18	50	24	3	100
(7) Teacher's role in the spatial environment.	4	23	43	29	1	100
(11) Creative use of teaching-learning space.	4	26	41	24	5	100
(2) Use of instructional media center.	9	41	27	21	2	100
(12) Utilizing the physical environment.	11	29	48	11	1	100
(4) Teacher's control and use of voice.	15	46	34	5	0	100
(1) Lesson planning	19	46	31	4	0	100

schools was questioned by all groups, whether for observation or as teacher assistants. A full day or series of days permitted greater out-of-classroom contact for the student teacher with the teachers and with the children. Children accepted the student teacher's authority and responsibility more readily over an extended period. In particular, the curriculum unit booklet was considered to be more useful when it was read, attempted, and discussed in the open-space setting itself. However, a three week practicum was too crowded with other activities to permit a reasonable attempt to be made on the booklet.

Integrated program. There was general agreement among the student teachers, especially the undergraduates experiencing a 'core' program, that the integration of subject fields lessened the duplication of materials presented at the university, and permitted a focus to be maintained on teaching. This could be particularly valuable for the exposition of particular features of a program where an innovation such as open-space was being discussed.

Role of university consultant. Student teachers suggested that university consultants should spend longer periods in the schools. The consultants could provide a valuable perspective by suggesting features which may emanate from the articles and which, although not necessarily applicable in the co-operating classroom, might be useful in one's own area and school. Teachers also requested that consultants, attached more consistently to one school, could obtain more balanced views of the student teachers' adaptation to the open area. Three way conferences among student teachers, cooperating teachers, and university consultants were frequently mentioned as a means of relating the unit material to the teaching experience, as well as giving practical expression to team planning and feedback.

Self-selection and individualization. Reaction varied to the semi-self-instructional nature of the booklet. Criticisms indicated that the respondents found difficulty in knowing on what basis to select material; they attempted either little or all of the unit. Many of the respondents suggested that the readings should have been compulsory. Some thought that participation in the unit activities should have contributed to the student's university evaluation. There was strong support for frequent discussions on the articles and activities. Those supporting the self-selection argued that the idea was good, but that pressure created by student teaching and university commitments forced the booklet into a low priority, with only minimum time devoted to articles "that looked interesting." One graduate felt that the attempt to individualize university instruction by providing the booklet broke the monotony of lectures and seminars, but that some follow-up discussions were still necessary in the school setting. The majority of the interviewees were in favour of self-selection through a booklet format, providing the approach was clearly defined and provisions were made for feedback and interaction, preferably in the school setting with cooperating teachers and university consultants.

Inservice activities. The teachers were wary about the usefulness of some sections of the booklet for practising professionals. A commonly held view was that the articles were valuable as a collection instead of having to search for them. This made the booklet--or some modification of it--worthwhile as the focus for inservice workshops. The information and activity sheets were "fine if you can do and use the activity." Some teachers commented that they saw what the activity was aiming at, but could not be bothered doing it. Others suggested that an incentive was needed if this type of material was to have real value as an inservice aid.

The two school staffs who undertook the readings as an inservice experience advocated reducing the number of articles and presenting a lecture or seminar which would use these articles as required pre-reading. It was suggested that all teachers newly appointed to open-space schools should be able to acquaint themselves with this type of material and visit several schools before taking up their appointments. Teachers generally agreed that the articles did not reflect what was occurring in their schools but that some opportunities for discussing the content might develop greater awareness of possibilities for using open-space in more varied ways.

Discussion

The question assumed that the needs of open-space schools were either self-evident or else could be identified easily through the literature. The findings suggest that the research and description in the booklet are not consistent with the perceptions of the respondents involved in this study.

The degree of similarity in the levels of confidence and orientation expressed by each of the three groups also suggests that neither student teachers nor experienced teachers were aware of the features characteristic of the open-space environment. Some effort to overcome this deficiency seems desirable. The unit booklet on the spatial environment may be one means whereby a basic level of awareness may be promoted, if modifications to the curriculum resource are made.

Throughout the discussion of the findings in this study, reference will be made to the wider implications of theory-practice orientation. The ways in which teacher preparation can be adapted to open-space may not be peculiar to that setting. The need for different approaches to both practicum and integrated theory seems evident from the interview comments, yet few specific suggestions relate directly to open-space. The philosophical basis for developing open-space schools and their later use and misuse were suggested as a starting point. Extended visitations to different spatial environments may also acquaint teachers with various ways in which this space can be used. The comments suggested that there is no substitute for actual involvement in the practical setting, providing that there is some awareness of the range of possibilities for teaching within that setting.

An assumption which was substantiated by the tenor of the comments, although it is not directly dealt with in this question, is that a semi-self-instructional booklet is a useful tool in developing awareness of a facility by drawing together readings, information, and activities. Thus, the preparation envisaged for teachers may be aided by the use of such materials. It was also accepted that these materials were more effective when they were applied directly in the actual situation to which they referred. These points will be re-examined in later findings.

The findings suggest that teacher preparation can be adapted to open-space settings by increasing the time, range, and regularity of contacts with the schools, by emphasizing space as a concept, by providing in-service activities, and by continuing to use different methods through such means as a self-instructional booklet.

SPATIAL FEATURES

What spatial features should be stressed in preparing teachers for open-space schools?

Data Sources

Three sections of the Professional Preparation Questionnaire (PPQ), some of the interview questions, and isolated comments occurring in the Individual Choice Diary (ICD) provided data.

Findings from Questionnaire Responses

Section three of the Professional Preparation Questionnaire asked the reasons why teachers need to be prepared to teach in open area schools. Learning to adapt both himself and his pupils to the environment was seen as the most important of the six items listed (Table 4). Learning to be an effective communicator received the next strongest indication of agreement. Control was rated least important of the six items.

The free activity of pupils in a spatial environment (PPQ, section IV) was seen as encouraging natural movement and activity more than co-operation and mutual aid, or spontaneity and creative skill. Providing free activity for pupils was considered not to be a major reason in planning open area schools (Table 5).

Section five of the PPQ asked respondents to identify the important features of open area schools which teachers need to consider. Strong disagreement was expressed over teacher visibility to colleagues and pupils. The strongest agreement was given to the last two items (Table 6): concern for each child's adaptability to his spatial environment, and flexible use of time for children's learning activities. Grouping and re-grouping of pupils, and teaming with colleagues were also highly rated.

Findings from Interview Comments

Some of the comments from the interviews concerned methods for teacher observation of the physical environment. The convenience of placement for facilities and equipment, the range of resources and their possible uses, and the difficulties as well as the advantages in the various types of moveable furniture in open-space were mentioned. The use of the physical environment was reported by the respondents

TABLE 4

REASONS FOR SPECIFIC PREPARATIONS FOR TEACHING IN OPEN-SPACE SCHOOLS

Items ranked in order of agreement (PPQ, III)	Numbers of Responses					Total N
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	
(5) Learn to adapt himself and his pupils to the environment.	53	45	1	0	0	99
(4) Learn how to be an effective communicator.	37	51	6	3	0	97
(6) Understand how to develop children's interest in their studies.	31	53	10	5	0	99
(3) Acquire efficient techniques.	28	55	11	4	1	99
(1) Learn to understand children's needs.	24	54	15	5	1	99
(2) Know how to control children.	16	43	22	17	1	99

TABLE 5

RESPONSES TO ITEMS REGARDING FREE ACTIVITY IN OPEN-SPACE SETTINGS

Items ranked in order of agreement (PPQ, IV)	Number of Responses					
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total N
(1) Encourages movement and physical activity which is natural to children.	23	64	10	3	0	100
(3) Encourages cooperation and mutual aid amongst children.	20	61	17	2	0	100
(2) Encourages individual spontaniety and creative skill.	17	61	19	2	0	99
(5) Is a practical way of organizing a class of children of different ages and intelligence levels.	5	41	38	14	2	100
(4) Is the major reason why open areas were planned.	6	20	48	19	7	100

TABLE 6

TEACHERS' AND STUDENT TEACHERS' PERCEPTIONS OF THE IMPORTANT FEATURES OF OPEN-SPACE SCHOOLS

Items ranked in order of agreement (PPQ, V)	Numbers of Responses					Total N
	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	
(6) Concern for each child's adaptability to this spatial environment.	43	51	5	0	0	99
(7) Flexible use of time for children's learning activities.	40	51	8	1	0	100
(2) Grouping and regrouping pupils for instruction.	27	62	9	2	0	100
(4) Teaming with colleagues for instruction.	25	58	13	3	0	99
(1) Controlling the amount of noise generated by the class.	21	56	19	3	0	99
(3) Making daily use of the instructional media center.	18	58	17	7	0	100
(5) Being 'on show' to many colleagues and pupils.	2	8	20	47	21	98

to be advantageous for grouping for instruction and for team teaching. There was little evidence of these practices in the schools used in the study, but both were emphasized in several of the articles.

Interviewees admitted a lack of knowledge about the varieties of space--personal, psychological, social, free--and suggested that this information should form part of the content of teacher preparation courses. The lack of literature on the creative uses of space in school settings also received comment. Several respondents stressed the need to consider the children in the spatial environment. This comment also appeared in the responses to the Individual Choice Diary.

Findings from the Individual Choice Diary

Comments on individual readings in the booklet (Appendix A), drew attention to specific features mentioned in particular articles: daily records, interest centers, discovery learning, the contract method, the teacher's role; the matching of pupils and teachers, space as a tool, moveable desks; relational space, grouping, cooperative teaching and planning; utilization of facilities, routines, reactions of teachers and parents, human resources, fluid space, and the building as a flexible teaching unit.

Discussion

Two points stand out from these findings: There were many features which the respondents felt should be stressed in preparing teachers for open-space environments; several of the features did not seem to be unique to open-space, but might be applicable generally to teacher preparation.

In particular, the responses indicated that attention needs to be directed to the concept of space. This may well apply to a self-contained or enclosed classroom as well as to an open area. The varieties of space of which a teacher needs to be cognizant, and the ways in which each may best be used effectively, could be developed in greater detail. Comments tended to suggest, however, that the teachers were equally concerned about the strategies which should be employed in the use of space as they were about the nature of the space itself.

This concept of space was linked with the other theme running throughout the research findings: the practical operations in the schools were not similar to those described in the articles. On the one hand, this suggested that in-service programs for teachers should provide awareness of the uses to which open-space is being put in other locations. On the other hand, student teachers also need to be made aware that the practices seen in the schools used in this study were not necessarily the only, nor the best, teaching strategies for utilizing space.

The physical environment figured prominently in the comments. Again, this suggests that teachers should seek opportunities to explore possibilities of teaching within the physical setting so that theorizing on the flexibility and adaptability of that environment can influence actual practice. One obvious difficulty was voiced consistently in the interviews: time was so absorbed in undertaking the daily routines of teaching, that there seemed to be little opportunity to plan different strategies or to attempt variations in physical arrangements. Nevertheless, some teachers were adamant that innovations of this nature were essential in their open-spaces, so that they could be more fully aware of possibilities and limitations provided by the physical setting.

In summarizing their opinions and reactions to the unit booklet, many respondents mentioned that the various descriptions of the use of open-space were important to provide a greater awareness of this facility. Thus, teacher preparation may need to provide articles in some condensed form, similar to the booklet used in this research, in order to have such variety readily accessible. Alternatively, visits to other school settings may increase the conscious awareness of the varied uses of space and of the facilities provided.

THEORY - PRACTICE RELATIONSHIPS

What theoretical concepts can be used in practical settings?

Data Sources

In addition to the data already referred to, the sources for response to this question were interview comments, responses in the Individual Choice Diary (ICD), and section C of the Unit Evaluation (UE).

Findings from the Unit Evaluation

Two items in section C of the Unit Evaluation were related to this question. One referred to the ways in which the booklet drew together aspects of theory for use in the practical setting; the other asked for ideas on how the theoretical and the practical aspects of teacher preparation could be more closely related to each other.

Three major concerns were evident in reply to the first item: (1) every situation was different for each teacher and therefore there was no substitute for personal teaching experience to integrate theory with practice, as the booklet suggested; (2) the booklet provided the rationale and directed attention to the physical set-up, with an emphasis on particular practical facilities, even though these were not always applicable in specific teaching stations; (3) the booklet was extremely helpful in bringing together research articles and descriptions, and it should be compulsory for all pre-service and in-service teachers, as it may be their only real source of information relating theory to the school situation. These responses did not detail what theory was applicable, but assumed that the booklet, as theory, was appropriate.

Specific suggestions emanated from the second item. In-class observations were stressed--"we were given what to look for, therefore we saw it." Seminars conducted by university personnel in the school, together with inservice workshops for teachers, were advocated. The graduate students considered that their half-day assistantships were beneficial in relating theory obtained during the week to the actual

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settings. Several respondents re-iterated the probable value of extended internships. Some teachers and undergraduates requested that specific times be set aside in the school for assignments and activities such as the booklet proposed. Another consistent comment related to the greater involvement of university consultants working on a full-time basis in the schools as needed resource personnel, since the teachers seemed to have neither the time nor the interest to commit themselves to the student teachers.

One discerning comment from a graduate student pointed out some of the continuing difficulties of relating theory to practice:

> Because the theoretical aspects grow out of the individual's desire for what should be, and the practical out of a resignation to what 'apparently' is. Instead of denying that frustration and failures in the teaching situation exist, it is important that they be expressed honestly, emotionally, and without fear of which personage might be turned off. Theory has no business being a part of my considerations unless it grows out of my experience.

Findings from the Interview Comments

The interviews evoked comments on the need for more effective communication between the university and the schools in order to provide for mutually prepared, directed activities and observations. More opportunities for student and cooperating teachers to talk together might bring out both theoretical and practical considerations of any particular situation. Again, many comments were directed towards the three-way conferences for student teachers, cooperating teachers, and university consultants on a regular basis. One school staff felt that the materials provided in the booklet did not provide the stimulation which only participation in an open-space environment can afford.

Nearly every interviewee advocated more practical experiences in open-space settings. The aversion to half-day observations was compensated by an insistence on longer practicum periods in each year of the preparation program. Continuing, directed, cooperatively planned experiences at frequent intervals would, it was claimed, make university work more meaningful.

Findings from the Individual Choice Diary

Reactions were favorable to the use of a curriculum resource unit which provided theoretical readings, general information, and practical activities. The booklet was perceived by many respondents as one means of relating theory to practice. In particular, the activities were valued for directing observations and providing actual suggestions for using the available space and resources in particular ways. Criticism from student teachers stemmed from the difficulty of carrying out these activities in someone else's teaching area. Short, simple, clearly defined observations and activities were applauded. Some respondents suggested that the activities could have been more directly related to each specific article in the curriculum unit, in an attempt to put certain features described there into practice. Similarly, the suggestions for the teacher conferences and discussions were considered to be an excellent idea, essential to the successful use of the booklet by both the student and co-operating teachers. However, the student teachers often commented that these discussions did not occur. The summary (Table 7), indicating the frequency with which these information and activity sheets were categorized as having positive (or favorable), or negative (or critical) comments, shows a 4:1 ratio in favor of the activity sheets and worksheets, teacher discussions, and directed observations.

The sheets seeking reaction to conferences between teachers and student teachers suggested questions which might be considered to promote discussion and mutual awareness of the particular spatial setting in which both were working. Examples of the responses from one of these activity sheets (Appendix E) showed that the students sought to identify the concepts on open-space in the readings with the settings in which they were teaching.

Discussion

These findings have been related to three facets of the theory-practice concept for open-space schools: the respondents' perceptions of the usefulness of the curriculum resource booklet for incorporating theory into the practical setting; specific suggestions on what aspects of theory can be applied in open-space practical settings; and general comments on the university-school relationship.

The unit booklet on the open-space environment seems to have been accepted by the three groups in the study. The provision of

TABLE 7

SUMMARY OF RESPONSES TO SPECIFIC ITEMS IN THE INDIVIDUAL CHOICE DIARY RELATING TO PRACTICAL ACTIVITIES

Item	Total Responses		Ratio	
	Positive	Negative	Positive	Negative
Awareness Activity	31	8	4	1
Awareness Worksheets (3)	87	24	4	1
Teacher Conferences & Discussion (4)	90	20	4.5	1
Directed Observation (3)	99	15	6	1
Directed Observation Worksheets (4)	84	38	2.2	1
Teacher Discussion Worksheets	19	10	2	1
Small Group Information	28	4	7	1
Small Group Worksheets	20	5	4	1
Class Teaching Information	12	8	1.5	1
Class Teaching Worksheet	10	8	1.2	1

semi-self-instructional materials, bringing together in convenient format research and descriptive readings, general information, and practical activities, was welcomed by some respondents as a positive step towards utilizing theory in the practical setting, but ignored in the comments of others. The precise details of what content is included, and the juxtaposition and relative importance of each segment depends on the orientation of the curriculum designer and on the comments provided by those who use the materials. It must be recognized that such a booklet is only one avenue through which theoretical concepts may be introduced into the practical setting.

The respondents were people directly involved in practice teaching; their experiences might have affected their views of the more general theory-practice relationship. However, it is important to recognize that a majority of the respondents favored improved university-school communications. Both the teachers and the student teachers indicated a concern for mutual planning at all levels.

Specific suggestions regarding the use of university consultants for extended periods in the schools are not new. Perhaps the clinical professor concept being practised in some other centers may provide some guidance for the solution of this problem. In open-space schools, the differences in the settings, the availability of multi-media facilities, the use of co-operative and team teaching, and the variety of pupil groupings may all require greater consultant roles from university staff, both for student teachers and for co-operating teachers.

A major concern of the study was to provide a sufficient variety of exposure and experience for the student teacher, without denying him some sense of belonging to, or acceptance in, one school setting. Both forms of practical experience with open-space settings can be directly related to university courses. It may be possible to incorporate both into each year of a program. One of the repeated comments regarding the booklet advocated its use in directed observation during the first year of a program, in order to establish some basic experiences for student teachers in open-space settings.

SUMMARY

Each program of teacher preparation tends to emphasize different features and different methods of preparation. The questions in this chapter have attempted to focus attention on the open-space components in a teacher preparation program.

Some data have been drawn from each of the five instruments in order to give a broad range of respondents' perceptions regarding teacher preparation.

In orientation towards teaching and teacher preparation, the respondents showed strong preference for those items concerning children and teachers. Some differences among the three groups were noted, with the undergraduates tending to emphasize the ideal, the graduates the innovative, and the teachers the accepted statements relating to teaching and preparation.

The findings indicate that teacher preparation can be adapted to open-space settings through providing more exposure to open-space environments, through the presentation of the philosophy, rationale, and physical attributes of open-space schools, through in-service education for teachers, and through the provision of self-instructional materials for pre-service and in-service use.

Specific features which can be stressed in such a preparation program include basic knowledge about, and awareness of, group dynamics, various types of space, team or co-operative teaching, and adaptation of teacher and pupil to the environment. Many other specific points mentioned were incorporated in the articles provided in the booklet.

The theoretical concepts useful for practical settings depend on the relationships between the university and the schools. The booklet about open-space instructional settings was seen as promoting theory in the practical setting. Seminars in the schools, extended practicum experiences stretched over each year of the program, full-time university personnel attached to schools as consultants, mutually planned observations and directed activities, and three-way conferences in the schools during student teaching were all advocated.

This chapter has concentrated on teacher preparation. The unit booklet content and the changes evidenced in the respondents will be considered in the next chapter.

CHAPTER 5

FINDINGS AND DISCUSSION RELATING TO THE OPEN-SPACE CURRICULUM RESOURCE UNIT

The findings presented in this chapter relate to the second sub-problem: To monitor reactions of teachers and student teachers to the use of a curriculum resource unit in open-space and enclosed classrooms.

The questions posed for each section in the chapter direct attention to the format and content of the curriculum unit, to the changes in awareness evidenced in the subjects, to the features of open-space deemed important, and to the preferences of the subjects for the type of setting in which they wish to teach.

Background information on the response to the curriculum resource unit is provided as an introduction to the chapter.

BACKGROUND DATA

Data for the study were collected using five instruments. A summary of the returns from each group shows the distribution of the responses for each instrument (Table 8).

On the basis of the dates recorded in the Individual Choice Diary (ICD) when each item was attempted, some estimate of the distribution of the time devoted to the curriculum unit was made. Table 9 shows that most of the subjects completed the material over

TABLE 8

RESPONSES OF THE SUBJECTS BY GROUP TO THE EVALUATION INSTRUMENTS

Instrument	Numbers of			Total N
	Graduates	Undergraduates	Teachers	
Professional Preparation Questionnaire	27	24	49	100
Individual Choice Diary	14	21	34*	69
Activity Sheets	15	21	6	42
Unit Evaluation	26	20	37	83
Interview	12**	21***	39***	72

Notes: * In addition, one staff of 14 responded on a composite return
** Individually, selected from a table of random numbers
*** In groups, by school

TABLE 9

TIME PERIODS DEVOTED TO THE CURRICULUM UNIT BY THE GROUPS

Groups of subjects	Separate periods of time devoted to the Unit				
	One week or less	Two periods	Three periods	Four or more periods	Not indicated
Graduates N = 14	2	3	6	1	2
Undergraduates N = 21	1	9	6	5	0
Teachers N = 34	7	13	8	4	2
Total N	10	25	20	10	4
Total percentage	14.5	36.2	29.0	14.4	5.8

two different periods of time.

The approximate proportion of the booklet completed by each respondent was also estimated. Table 10 shows that more than 70 per cent of the respondents attempted over half the unit booklet. The individual categorization of items within the booklet suggested that the early sections of the booklet were completed by more people than other sections. The ten readings, except for the last three, received approximately the same frequency of response (Table 11).

Some generalizations are possible from these data. Respondents in all groups approached the unit in a linear fashion: that is, the earlier sections were completed more frequently than the later sections. More people from each group completed the articles than either the activities or the information segments. The most common reason for not completing the material was lack of time. The space provided in the ICD for comments was usually filled; in commenting on the articles, many subjects used much more space than the three lines provided.

The three groups differed on some responses. A greater percentage of teachers than student teachers did not respond to the majority of items in the ICD. Comments from the undergraduate respondents indicated that small groups of pupils had not been taught by them during the practicum as was suggested in the Unit. Little time was available for the students to be in open-space environments. Teachers suggested that some items were appropriate for students, but not for teachers.

Overall, the responses to the booklet were favorable, with

TABLE 10

VOLUME OF RESPONSE FROM EACH GROUP SHOWING THE PROPORTION OF THE BOOKLET COMPLETED

Respondents	Estimated volume in fifths				
	1	2	3	4	5
Graduates N = 14	1	4	0	5	4
Undergraduates N = 21	0	1	5	6	9
Teachers N = 34	2	4	9	10	9
Total N	3	9	14	21	22
Percentage Total	4.3	13.0	20.3	30.4	31.9

TABLE 11

FREQUENCY OF POSITIVE AND NEGATIVE RESPONSE TO THE ARTICLES IN THE UNIT BOOKLET

Article (in order of placement in the unit)	Numbers of Categorized Responses			% Total	Rank Order
	Positive	Negative	Total		
Ingalls	49	14	63	78	=5
Shaw	41	17	58	71	7
Eberle	31	21	52	60	9
Hersom	48	10	58	82	4
Sommer	34	19	53	64	8
Traditional Classroom--Never!	49	7	56	87	2
Anderson	49	2	51	94	1
Brunetti	29	8	37	78	=5
Drew	37	6	43	86	3
Smith	12	12	24	50	10

only five individual items receiving more negative than positive comment, from any one of the three groups.

RESPONSE TO THE STRUCTURE AND CONTENT OF THE UNIT

Can a curriculum unit be designed to change teachers' awareness of open-space settings?

Data Sources

The responses to interview questions provided data on the format of the booklet. The reactions to the content of the booklet were obtained from the Unit Evaluation (UE), and from the detailed comments about the items reported in the Individual Choice Diary (ICD).

Findings from Interview Comments

The general purpose of the booklet was apparent to most respondents. Many commented during the interview on the value of the foreword; some thought that the foreword should have mentioned that both critical and laudatory articles were included. Very positive comment was received regarding the juxtapositioning of information, articles, and activities within reasonably defined segments of the booklet.

Respondents suggested that the scope and nature of the articles be widened, especially to include material on traditional classrooms;

that those materials which duplicated content be removed; and that a check list or questions following each article be provided, in order to direct attention to the most important features.

The comments provided for each item of the ICD are sampled in Appendix D. The main points emerging from this analysis refer to the booklet content and are treated according to the segments of the booklet.

Findings from Individual Choice Diary

The introductory pages were well received, with the exception of the overview, which was considered unnecessary and impractical. The definitions of terms and statement of objectives evoked favorable comment.

The white information pages received mixed responses. Teachers often omitted these and the yellow worksheet pages. Nevertheless, the teacher conference/discussion pages stimulated favorable reactions. The awareness activity was not favored as much by teachers as by the other two groups of respondents. The small group activity and information sheets were well accepted by those who did them. The class teaching information, however, was considered unnecessary by the student teachers. The lecture received favorable reaction from both student teacher groups. The list of additional readings was seen as superfluous, especially by the teachers: lack of time and inaccessibility of readings were the reasons for this reaction. Graduates and teachers saw the interview as an unnecessary duplication, in view of the written comments in the ICD.

Response to the idea of providing the yellow activity sheets was positive from the 42 per cent of the respondents who completed them. Nevertheless, reaction to some individual activity sheets was unfavorable. The student teachers contended that the teacher discussions often did not occur. Undergraduates, in particular, seemed unclear about the requirements of the directed observation sheets. This group also protested the lack of time to use the small group and class teaching worksheets or to discuss them with teachers. Teachers considered the yellow worksheets inappropriate as an activity; the 12 per cent who did attempt them, however, responded positively, indicating the benefit that they had gained from alterations to furniture, re-grouping of pupils, and re-storage of materials. One teacher responded that the worksheets "made you think formally about your own area and how and why you work in these areas."

The ten articles were distributed throughout the booklet in three groups: descriptions of open-space settings, group dynamics and team teaching, and critical and research based articles. In the first grouping the Ingalls' article was deemed realistic, enjoyable, and equally applicable to the traditional classroom. Forty-eight respondents were enthusiastic over Hersom's suggestions. The second grouping contained only two articles. The Sommer article on relational space and group dynamics either fascinated or confused the subjects. Forty-nine respondents applauded the other article which described team teaching in Calgary, because of its specific descriptions and practical suggestions. Of the critical and research articles in the third grouping, Anderson's was accepted with relief and some amusement as a realistic and practical criticism providing firm and helpful conclusions: this article received a greater percentage of favorable comment than any other. Many respondents omitted Brunetti's article, probably because of poor reproduction and small print; twenty-nine people praised the article as "logically organized" and "dispassionate" in contrast to Anderson's. Drew's article, in spite of poor photographic reproduction, was very well received, especially for its structure. Smith's one page article was given scant attention (Table 11).

In summary, the reactions expressed in the ICD on the content of the booklet were generally favorable. Of the three groups, the graduates were more consistently positive in their reaction to the items. Apart from the articles, the response to the other two segments of the booklet was not high, particularly from the teachers. The specific directions provided in the white information sheets evoked strong positive reaction from those who commented. Similarly, from those who took time to work on the yellow activity sheets, favorable reactions were gained.

Findings from the Unit Evaluation

The Unit Evaluation contained two questions which asked for recommended changes in the unit booklet. Criticisms were directed towards length of the booklet and lack of motivation to attempt the study. The strongest positive suggestion was to divide the booklet into three or four smaller ones, corresponding to the format groupings of the booklet. The respondents perceived the writers of the articles as promoting open areas as the panacea for all educational ills. More emphasis on comparisons of traditional classrooms with open education was requested. More descriptions and research reports based on local and practical conditions were frequently advocated. Some of the failures of open-space also needed to be mentioned. The undergraduates, in particular, were in favor of including more yellow worksheets to direct their activities whilst in the schools. More room for comments on these worksheets was also desirable. Several respondents felt that the booklet should be specifically designated for use only in open-space teaching areas. Provision should be made for additional discussions among teachers, student teachers, and university consultants, greater integration of teaching practice with Curriculum and Instruction courses, and a higher priority to developing awareness of open-space.

Discussion

The findings on the structure or format of the booklet are clear. The booklet was easy to follow in basic format but specific suggestions for improvement were offered. The most important modification would require dividing the material into three smaller booklets, with a possible reduction in content, either through omitting some of the descriptive articles, or summarizing some of the repetitious material, or both. A greater variety of activities could be provided to direct attention to other practical aspects of the application of space in the school environment. If this modified format were implemented, it may also be desirable to establish specific time periods for completion and discussion of the material in the first booklet before the next was issued. The structure of readings, activities, and explanatory information should be retained in each booklet.

The booklet was an initial foray into the field of awareness of open-space school environments. The needs of the particular environments and populations to be served may also dictate different emphases in content. It is argued that the provision of materials in this semi-self-instructional booklet form does increase awareness of the spatial environment on the part of teachers and student teachers in teacher education programs.

IMPORTANT FEATURES OF OPEN-SPACE

What are the important features of open-space settings perceived by teachers and student teachers?

Data Sources

The seven statements in the Professional Preparation Questionnaire (PPQ), section v, have already been considered in Chapter 4; they will be re-iterated here since they specifically sought a measure of agreement on the features important to open area schools. The main sources of data were the interview comments, and comments in the Individual Choice Diary (ICD) provided in response to specific features mentioned in the articles.

Findings

The data in the PPQ items indicated that the strongest preference was concern with the child's adaptability to the spatial environment (Table 6). Flexible use of time, and the grouping and re-grouping of children were also considered important.

A synthesis of the data from the interviews and the ICD suggest that the following are perceived as the important features of open-space settings:

co-operative planning and teaching
ways to organize groups and activities
flexibility in the use of different spaces
use of resource and multi-media centres
children's adjustment to space
expectations of teachers for the use of space and resources
additional "back-up" rooms, storage, and shelf-space
freedom of movement for children
planning activities rather than teacher's talking: use of different teaching strategies

Discussion

The data do not lend themselves to rank ordering the importance of these features. The items from the PPQ have been established in rank order, but the range of items was limited by the instrument. The free comments in the interviews and ICD provided a much greater range, and the list given in the previous paragraph is representative of those responses (cf. Appendix C and D).

Three features seem to be prominent. There was considerable concern from the subjects regarding the adjustments children will be called upon to make in an open-space environment. In part, this may indicate that the articles in the booklet have provided an awareness of this aspect. In part, it is a response to the observed phenomena in the schools. The second set of features focused attention on the use of facilities, resources, and space itself. Many of the articles concentrated their descriptions on these physical features and they may have played an important part in the development of instructional strategies. Comments, however, were directed not so much to what the physical environment was like, as to the use which could be made of whatever environment and features were actually available. The third group of comments centred around the changing roles of the teacher, and the co-operative nature of the teaching task. The comments suggested that the teachers in the schools in this study did not engage in co-operative or team teaching, that they had no clear expectations of their own role in open-space as distinct from their role in a conventional classroom, and that they were not apparently engaged in innovative techniques which might be adapted to the open-space environment.

Two further observations may be made. There were only five teachers in the population who had not taught in conventional rooms at some stage in their careers. Sixty per cent of the teachers had experience of both open and conventional classrooms, while thirty per cent had taught exclusively in traditional rooms. These figures suggest that approximately half of the respondents were teaching and observing in conventional rooms during the period of the study. Thus, the comments on the role of the teacher in the open-space environment might have been partly a reflection of the student teachers' lack of opportunity to become acquainted with teachers in this environment. The second observation needs to be made that many teachers operating in conventional rooms reported that they were now more aware of the potential for using many of the techniques and facilities suggested in the booklet in their own enclosed settings. Adjustment, therefore, may apply to any environment, rather than one labelled 'open-space'.

The data obtained from the respondents imply that personal adjustment to, and utilisation of, facilities and settings are as important as the physical features of the environment.

RESPONSES TO CONTENT

To what extent does the content of the curriculum unit develop an awareness of the open-space environment?

Data Source

Data were obtained from the eighteen statements in section A of the Unit Evaluation (UE). A five point scale (Very great--none) was used to record the extent to which each respondent considered that the unit booklet had assisted understanding of each item.

Findings

The eighteen items were divided into two broad categories (spatial features, and preparation for instruction) by a panel of judges. The items have been re-grouped according to these two broad categories. The mean scores and standard dwviations for each group of subjects are presented in Tables 12, 13, and 14.

The mean scores for the nine items relating to spatial features are greater for each group of respondents than those in the second category, with only a few exceptions.

For most items, the mean of the teachers' group is lower than for either of the other groups. The means for the undergraduates are generally higher in both categories.

Discussion

If it is assumed that a mean of 2.5 on a five-point interval scale indicates average or mid-point development of an awareness of the concept measured, then the respondents in this study perceived the booklet as contributing to their awareness. However, scores on such five-point scales tend to be inflated, and it must be recognized that the respondents had difficulty establishing the extent to which their responses were truly a reflection of the impact of the booklet, as distinct from their previous knowledge and experience. For these reasons it would be more realistic to assume that an arbitrary figure,

TABLE 12

PERCEPTIONS OF AWARENESS ON SPACE AND PREPARATION IN THE GRADUATE GROUP

N = 26

Items Ranked in Order of Highest Mean (UE, A)	Mean	S.D.
Awareness on Space		
(7) Become acquainted with research on open-space	3.62	0.923
(18) Become acquainted with articles useful for teaching in open-space settings	3.56	0.804
(11) Become conscious of physical environment in working with small groups	3.45	0.865
(3) Identify facilities associated with open-space	3.42	0.927
(8) Become acquainted with criticism on open-space	3.35	0.917
(2) Understand and use terms like 'open-space' . . .	3.31	0.867
(5) Differentiate features of environment . . .	3.28	0.665
(1) Develop an awareness of space	3.24	0.763
(4) Assess variety of ways space is used	3.19	0.621
Awareness regarding Preparation		
(6) Obtain insights into small group interactions occurring in a spatial environment	3.31	0.867
(15) Plan class activities to use accessibility of resources	3.28	0.826
(14) Plan activities to consider interaction of class	3.21	0.706
(13) Plan activities for total class in relation to the physical grouping	3.20	0.632
(10) Plan activities for small groups using facilities and resources available	3.15	0.907
(9) Plan activities for small groups . . . of children	3.04	0.940
(17) Plan lessons to incorporate alternative activities for children	2.96	0.774
(12) Plan activities for the total class . . .	2.92	0.627
(16) Plan lessons to incorporate several teaching strategies	2.72	0.665

TABLE 13

PERCEPTIONS OF AWARENESS ON SPACE AND PREPARATION IN THE UNDERGRADUATE GROUP

N = 20

Items Ranked in Order of Highest Mean (UE, A)	Mean	S.D.
Awareness on Space		
(7) Become acquainted with research on open-space	3.80	0.678
(8) Become acquainted with criticisms on open-space	3.80	0.748
(2) Understand and use terms like 'open-space' . . .	3.65	0.852
(18) Become acquainted with articles useful for teaching in open-space settings	3.60	1.019
(3) Identify facilities associated with open-space	3.50	0.742
(5) Differentiate features of environment . . .	3.45	0.921
(1) Develop an awareness of space	3.35	0.726
(11) Become conscious of physical environment in working with small groups	3.35	0.654
(4) Assess variety of ways space is used	3.15	0.910
Awareness regarding Preparation		
(15) Plan class activities to use accessibility of resources	3.60	0.800
(13) Plan activities for total class in relation to the physical grouping	3.50	0.742
(14) Plan activities to consider interactions of class	3.45	0.805
(17) Plan lessons to incorporate alternative activities for children	3.40	0.735
(10) Plan activities for small groups using facilities and resources available	3.20	0.980
(12) Plan activities for the total class . . .	3.15	0.910
(9) Plan activities for small groups . . . of children	3.15	0.910
(16) Plan lessons to incorporate several teaching strategies	3.10	0.889
(6) Obtain insights into small group interactions occurring in a spatial environment	3.05	0.865

TABLE 14

PERCEPTIONS OF AWARENESS ON SPACE AND PREPARATION IN THE TEACHER GROUP

N = 39

Items Ranked in Order of Highest Mean (UE, A)	Mean	S.D.
Awareness of Space		
(7) Become acquainted with research on open-space	3.72	0.986
(18) Become acquainted with articles useful for teaching in open-space settings	3.45	1.207
(4) Assess variety of ways space is used	3.44	0.810
(3) Identify facilities associated with open-space	3.36	1.000
(2) Understand and use terms . . .	3.23	1.073
(5) Differentiate features of environment. . .	3.23	0.973
(8) Become acquainted with criticism on open-space	3.18	0.984
(1) Develop an awareness of space	3.10	0.871
(11) Become conscious of physical environment in working with small groups	3.05	0.932
Awareness of Preparation		
(13) Plan activities for total class in relation to physical grouping	3.00	0.958
(14) Plan class activities to consider interaction	3.00	0.934
(6) Obtain insights into small group interactions occurring in a spatial environment	2.90	0.955
(15) Plan class activities to use accessibility of resources	2.79	0.882
(10) Plan activities for small groups using facilities and resources available	2.77	0.831
(12) Plan activities for total class . . .	2.77	0.973
(9) Plan activities for small groups. . for children	2.74	0.869
(16) Plan lessons to incorporate several teaching strategies	2.68	0.862
(17) Plan lessons to incorporate alternative activities for children	2.58	0.847

say 3.0, should be selected as the reasonable measure of development. The data, on this basis, suggest that most of the items were positively perceived.

The items relating to the spatial features showed a substantially greater mean than those relating to instructional preparedness. They suggest that the booklet had a greater influence in the awareness of spatial features than in preparation for instruction. This result may be influenced by the respondents' reluctance to overemphasize their previous knowledge of instruction. Substantiation for these inferences come from the comments of the respondents which suggest that, in fact, they had benefited from the booklet in their understanding of spatial features. It could also partially explain the much lower mean scores for the teachers on the instructional items.

The data also suggest that the items permitted a range of values to be selected by the respondents. The standard deviations for the teachers are greater than for the other two groups which suggest that the outer points on the continuum were used. Inspection of the maximum and minimum values for each item shows that only four items were checked at the lower limit (1) for the student teacher groups, while sixteen of the eighteen items were so checked by the teachers. All groups used the upper limit value (5) to approximately the same extent.

It is possible to suggest, on the basis of these data, that the teachers did not benefit from the unit materials to the same extent that the other two groups have indicated. The group of items on spatial features had a higher mean score than the remaining items suggesting that the booklet may have contributed to the development of an awareness of these items to some measurable extent. This inference is substantiated by the comments of all groups during interview.

SPECIFIC CHANGES IN CONFIDENCE LEVELS

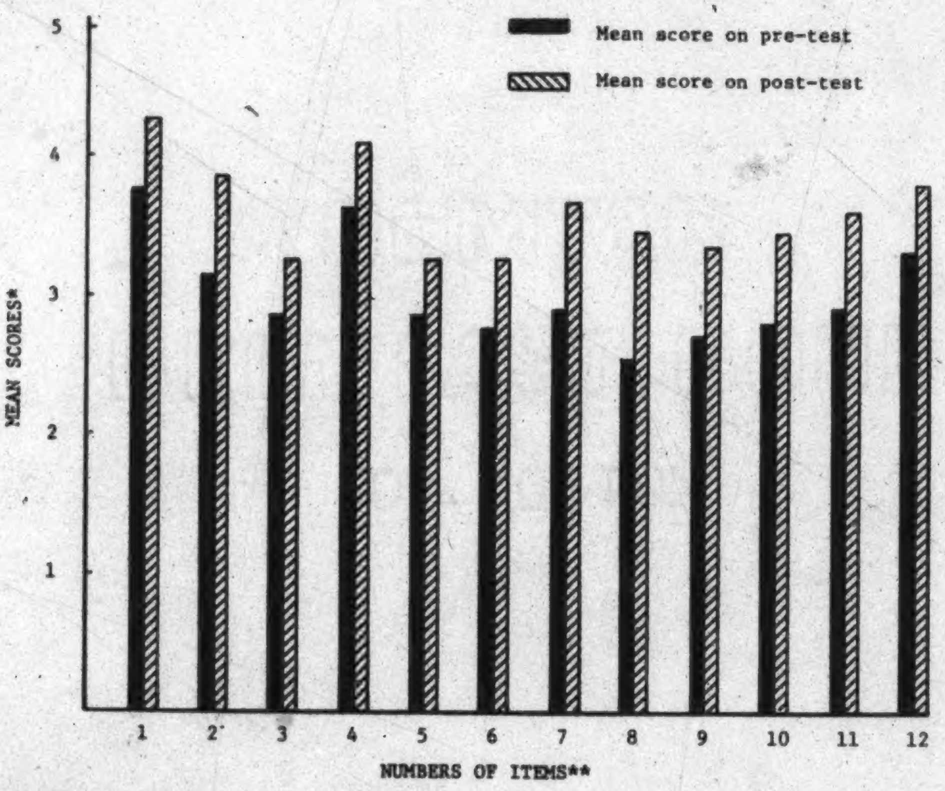
Does the initial level of confidence in, or understanding of, specific items change following exposure to the curriculum unit?

Data Sources

Section 1 of the Professional Preparation Questionnaire (PPQ) was a twelve item opinionnaire seeking a measure of confidence in, or understanding of, each of the items on a five point scale. These twelve items were repeated in the Unit Evaluation (UE) after the unit booklet had been completed. Seventy-nine of the respondents provided both sets of responses for comparison.

Findings

On a t-test of means each of the twelve items showed a level of probability beyond 0.001 for the seventy-nine subjects. A graph showing the degree of difference in the response for each item on the pretest and posttest is provided in Figure 8. The mean scores on pre-test-posttest for these subjects are given in Table 15.



* Mean score ratings: 2 = Little 3 = Moderate amount 4 = Considerable amount
**Statements for each numbered item are given in Table 15

Figure 8: Mean Scores Per Item Before and After Treatment

TABLE 15

DIFFERENCES IN MEAN SCORES ON PRETEST-POSTTEST RESPONSES TO MEASURES OF CONFIDENCE ITEMS FOR ALL SUBJECTS

N = 79

Items Ranked in Order of Measure of Difference (PPQ, I & UE, D)	Mean Scores Pretest	Mean Scores Posttest
(6) Implications of 'personal space' for children in a spatial environment	2.79	3.70
(8) Child's psychological space	2.58	3.42
(5) Teaching strategies in a spatial environment	2.86	3.67
(7) Teacher's role in the spatial environment	2.90	3.68
(11) Creative use of teaching-learning space	2.90	3.58
(2) Use of instructional media center	3.19	3.86
(9) Group dynamics, especially in open areas	2.70	3.33
(10) Social space as a factor in teaching	2.75	3.34
(1) Lesson planning	3.72	4.28
(12) Utilizing the physical environment	3.32	3.79
(4) Teacher's control and use of voice	3.65	4.11
(3) Team or co-operative teaching	2.82	3.27

On *t*-test values for mean all items showed $p < 0.001$

Note: Mean scores were equivalent to the following categories

2 = little
3 = moderate amount
4 = considerable amount

Analysis of the data for each of the three groups independently confirmed these differences. With the exception of item 1 (lesson planning) for the group of teachers, all other items were significant to the 0.05 level of probability or beyond for each of the three groups (Table 16).

Discussion

Analysis of the data suggests that scores on each of the twelve items showed significant increase in the posttest. This was apparent for all seventy-nine subjects and for each of the three groups separately.

The one item which did not show an increase, significant at the 0.05 level or better, was lesson planning in the teachers' group only. This suggests that the teachers as a group did not gain any significant increase in awareness of lesson planning during the period from the completion of the PPQ to the completion of the UE. It may be assumed that teachers have reasonable facility in this area, and therefore the outcome can be expected.

It must be recognized that the increased level of awareness indicated for each of the items by all groups probably resulted from a number of variables. With such a large number of significant differences, however, it can be suggested that the material in the unit booklet and the experiences occurring while the unit booklet was administered in the school settings contributed to this change in the respondents.

TABLE 16

COMPARISON OF MEANS BY GROUP ON THE PRETEST-POSTTEST FOR CONFIDENCE IN ITEMS ASSOCIATED WITH OPEN-SPACE

Items (abbreviated) (PPQ, I & UE, D)	Graduates N = 26		Undergraduates N = 20		Teachers N = 33	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
(1) Lesson planning	2.89	4.04***	4.05	4.70**	4.18	4.21
(2) Instructional media center	2.50	3.54***	3.05	3.65**	3.82	4.24***
(3) Team teaching	2.35	2.92**	2.45	3.00*	3.42	3.70*
(4) Use of voice	3.45	4.04**	3.40	4.10***	3.94	4.18*
(5) Strategies in a spatial environment	2.45	3.54***	2.60	3.65***	3.33	3.79**
(6) Personal space	2.77	3.65***	2.80	3.80***	2.79	3.67***
(7) Teacher's role in a spatial environment	2.85	3.58***	2.70	3.55***	3.06	3.85***
(8) Child's psychological space	2.65	3.23*	2.50	3.60***	2.58	3.46***
(9) Group dynamics	2.62	3.45***	2.15	3.00***	3.09	3.42*
(10) Social space	2.62	3.19***	2.55	3.40***	2.97	3.42*
(11) Creative use of space	2.69	3.46**	2.80	3.75***	3.12	3.58**
(12) Utilizing the physical environment	3.11	3.65*	3.15	3.70**	3.58	3.94*

Significance on _t_-test for means:
* = 0.05
** = 0.01
*** = 0.001 (or beyond)

It also appears that the two items showing the greatest increase are those concerned with children and their spatial environment. The two items with the least change were those about team teaching and teacher's use of voice.

The findings suggest that exposure to the curriculum unit has contributed to a significant positive change in the level of understanding or confidence in each of the twelve items presented.

PREFERRED TEACHING SETTINGS

In what type of setting would the respondents prefer to teach?

Data Sources

One section of the Professional Preparation Questionnaire (PPQ) asked for preferences of teaching setting from among five possible settings. This same section was repeated in the Unit Evaluation (UE). Pretest--posttest comparisons were then made.

Findings

There were two shifts in emphasis on the preferences of the respondents following the completion of the unit booklet. Fewer subjects preferred alternating in both the self-contained and open-space environments. The greatest shift in each of the three groups was towards the open-space environment, although the majority of the population still favored the self-contained classroom. The analyses of these data for all subjects are provided in Table 17.

Further analysis of these data by groups (Table 18), shows that the greatest change occurred in the graduate group. In the PPQ, 52 per cent of the graduates favored alternating experiences; in the UE, only 24 per cent opted for this preference, while the same percentage chose an enclosed room and an open area. For open-space settings there was an increase from four per cent to 24 per cent, showing considerable change for this graduate group, who had received more consistent exposure to open-space than had the undergraduates. The undergraduates and teachers also showed change in favor of teaching in open-space settings greater than change for any other preference.

Discussion

Both teachers and undergraduates, in the four schools attended by the latter, expressed a consistent preference for conventional classrooms on the pre-test. This may well have been because the majority in both groups had taught in enclosed rooms. The undergraduates, however, showed an increased preference for open-space settings in the posttest. The unit booklet, therefore, when used in a conventional setting, may have the same effects as when it is used in the open-space settings to which it refers, but the evidence is not conclusive.

The graduate group were exposed mainly to open-space

TABLE 17

COMPARISON OF PREFERRED INSTRUCTIONAL SETTINGS ON PRETEST-POSTTEST RESPONSES

N = 79

Preference Item	Percentage Response Preferences	
	Pretest (PPQ)	Posttest (UE)
Self-contained classroom	29	32
Open area environment	13	23
Both, alternating during each day	38	25
Either, i.e. no special preference	17	19
Any other named by respondents	3	1

TABLE 18

COMPARISON BY GROUP OF PREFERRED INSTRUCTIONAL SETTINGS

Preference Item	Percentage Preference by Group					
	Graduate N = 26		Undergraduate N = 20		Teachers N = 33	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Self-contained classroom	11	24	50	55	29	26
Open area environment	4	24	8	20	20	28
Alternating during each day	52	24	25	15	37	31
No special preference	29	28	17	15	10	15
Any other	4	0	0	5	4	0

environments. The considerable shift in their preference towards the open-space setting may suggest that the use of the booklet, in combination with this type of setting, assists respondents to become more aware of the setting and to show a preference for teaching in it. This supports one of the assumptions of the study that the actual setting influences response to the presentation of curriculum resource materials related to that setting. There were many other factors, however, influencing the respondents, and it is possible to suggest only that the unit booklet contributed somewhat to the graduates' change in teaching preference.

In considering these data, it is also important to remember that the majority of the respondents indicated a preference for conventional classrooms. In view of the large change in the student teachers in favor of open-space settings, the small percentage increase in favor of the enclosed classroom has little importance. The data, therefore, do suggest a change in preference for open-space settings following exposure to the booklet materials and the opportunity to observe and teach in such settings.

SUMMARY

The unit booklet on the spatial environment received favorable comment during interview and in the Individual Choice Diary. The data reviewed through the questions in this chapter suggest that there were definite changes in the responses of the subjects to awareness of the spatial environment. For the three groups, all but one item produced a statistically significant measure of probability at the 0.05 level.

The content of the booklet was perceived as producing an increased awareness of the spatial environment. The booklet did not produce as great an awareness of preparation for instruction.

The format of the booklet was well received. The major modifications suggested were (1) to divide the booklet into three smaller booklets having the same basic structure, (2) to omit or summarize some of the articles where duplication appeared, (3) to increase the range of activities which relate the articles to the physical setting, and (4) to incorporate articles reflecting local, practical, and traditional classroom environments. The three-fold emphasis on articles, information, and activities was favored by the proportion of respondents who chose to complete all three.

The important features of open-space settings were deemed to concern adjustment to the environment, utilisation of the physical features characteristic of these settings, and the changing roles required of teachers.

Student teachers' preference for teaching changed, particularly for the graduates, from wishing to experience both enclosed and open-space environments to a propensity towards open-space only. The majority of the respondents favored enclosed classrooms. The shift on the part of the graduates may be ascribed partially to the booklet being applied in predominantly open-space settings.

The study itself generated a variety of reactions. Most of the respondents expressed their interest in the research as a necessary and timely project. Several suggestions were made for modification which justified the researcher's approach of actively seeking feedback from the groups. Enthusiasm was expressed for the interview technique rather than for the diary record in evaluation.

The two chapters on the analysis of the findings have presented the data related to specific features of teacher preparation and the curriculum resource unit on open-space. Discussion of each set of findings has been provided. There appear to be several findings which present significant data on teacher preparation for open-space settings.

The concluding chapter will discuss the main findings by referring to the conceptual framework and the related literature. Inferences from the data can also be made regarding various aspects of teacher preparation, the characteristics and operation of open-space schools, and the process of curriculum development. Recommendations relating to each of these aspects, and to possible future research, will conclude the chapter.

CHAPTER 6

SUMMARY, IMPLICATIONS, RECOMMENDATIONS, AND CONCLUSION

This chapter summarizes the chief features of the study, reviews the findings and literature in order to draw implications regarding teacher preparation, curriculum resources, and open-space settings, and concludes with recommendations for teacher preparation, open-space settings, curriculum development, and for further research.

SUMMARY

The present study has looked at the way in which a resource unit can be used to provide feedback for curriculum development in the field of teacher preparation. The content selected for the curriculum resource unit was made up of articles depicting the open-space environment. The settings for the study were seven open area schools. The subjects were the teachers and student teachers who accepted the semi-self-instructional materials. While the unit booklet on the open-space environment was developed as the resource for the study, interaction has occurred which has related the findings to teacher preparation, open-space settings, and the process of curriculum development. Each of these will be considered in sections of this chapter as the implications and recommendations arising from the research.

The study has been concerned with one segment of teacher preparation curriculum. The use of a semi-self-instructional booklet was viewed as one means by which student teachers and teachers in-service may become acquainted with teacher preparation materials. The content of the unit on open-space, furthermore, was seen as one of a series of units which would provide the basis for curriculum components in a teacher preparation program.

No attempt has been made to consider the effects of open-space or of teacher preparation on the children in the environments used. Such considerations would require a different type of research. The intent was to develop awareness of the spatial environment, not to design techniques nor to train personnel in developing the skills required to teach in that environment. The performance and behavior of the respondents in the teaching-learning situations were also outside the purview of this research.

The study concentrated on two particular groups of student teachers at the University of Alberta and the co-operating teachers to whom these students were assigned. In generalizing to any other student teachers or cooperating teachers this limitation must be kept in mind. Replication of the study with other groups is suggested in order to establish some theoretical base for this approach to teacher preparation curriculum.

IMPLICATIONS

In the previous two chapters the findings have been considered. The implications of the study consider the main findings in the light of the related literature and the conceptual framework.

Teacher Preparation

The comments of the respondents indicated that the teacher preparation curriculum unit was perceived by the teachers and student teachers as a worthwhile approach. The findings explored the conceptual framework of the study. That is, two curriculum-instruction systems operated in schools during teaching practicums. Interaction between the six elements of the paradigm of education had some bearing on the outcomes of the study. Thus, the study implies that theoretical content can be presented in the practical setting, but that the setting also influences the nature and assimilation of the theory.

The findings were more positive than negative concerning integration of theory in the practical setting. The perceived lack of time and interest on the part of the respondents who attempted the curriculum unit during the normal practicum period clearly suggest that there are many constraints which need to be investigated before an activity requiring university-school co-operation is implemented. One of the most frequent comments from the student teachers referred to the absence, in the practical setting, of those features which were stressed in the booklet. This meant that student teachers were not able to apply the theory in some practical settings; thus the purpose of providing such materials may have been somewhat negated.

The findings also strongly advocated a more positive relationship between the school and the university. The role of the consultant was stressed in order to schedule three-way discussions among the student, the teacher, and the consultant. Clinical professorships have been established in other centers, and variations on the role of consultants are continually being investigated. The present study suggests that consultants need to be attached to schools, so that they can gain a more representative view of the student teacher's performance, and so that they may be available as inservice resources for staffs.

Many respondents suggested that specific elements of open-space theory could be applied more directly if the needs of particular schools, co-operating teachers, and student teachers were identified. Some teachers observed that if they had perused the booklet more thoroughly before the student teachers had begun their practicums, alterations could have been made to the content to be taught, to the physical arrangements in the environment, and to the proportion of time spent observing and teaching. Such elements assume major importance for some participants; mechanisms, therefore, should be provided to permit these, or similar matters, to be identified by all persons involved in the teaching practicum.

Planning sessions for consultants and co-operating teachers were proposed to alleviate this situation. If the conceptual framework for this study had been more completely implemented, many dissatisfactions expressed during interviews may have been obviated.

Both student teachers and teachers advocated greater use of curriculum workshops at the preservice and in-service levels. This suggestion reflects one assumption of the study, that practical involvement enhances theoretical understanding. The assumption was further supported by the pretest-posttest increase in awareness of the open-space environment. Moreover, the group showing the greatest consistent increase was the graduates, who had been teaching in predominantly open-space environments which were perceived to be adaptable to innovation.

Longer sequential periods of practical experiences, beginning with directed observations and progressing through selected activities with groups before initiation into class teaching, were repeatedly advocated by the subjects in the study. The importance attached to these aspects has been reported in recent research and in many descriptive articles (Peck & Tucker, 1973). The present study, however, did not seek to establish any data specifically on this area; it was, nevertheless, an area of obvious concern to the respondents.

If some of the foregoing findings are to be implemented, there is an equal need to consider the impact of the practical situations on the nature and content of theory in university courses of preparation. The undergraduates emphasized the value of their own "core" of professional studies interrelated with practical experiences. The graduates and the teachers ascribed importance to discussing curriculum issues in the light of school experiences. Both these issues formed substantial segments of most of the proposals for Elementary Teacher Education in the United States, and in the subsequent emphasis on performance based programs of teacher preparation. Some teachers in the study felt that the university personnel needed to become better acquainted with school practice before they could teach student teachers about such innovative approaches as open-space. Actual situations which student teachers will experience in schools have led many writers to stress the development of university preparation based on such experiences in order to supplement the seemingly unrelated studies in educational philosophy, history, and administration for the neophyte (Hilliard, 1971).

The use of a semi-self-instructional booklet to promote awareness of the open-space setting was accepted by most respondents. This is one means of varying the traditional lecture/seminar approach. Recent research has emphasized self-directed learning and direct involvement in the role to be learned and the setting to be used (McClain, 1970; Peck & Tucker, 1973). Respondents in the present study welcomed this form of practical preparation, but preferred to have more clearly stated guidelines for its completion.

Whatever the variations to the program or to the methods, the personal response of the learner to the material seems to be often overlooked in teacher preparation. The participants in the study requested greater opportunity for feedback and discussion. The literature suggested that attitude change influences teaching behavior, and that self-actualization and awareness of the classroom setting help the integration of theory with practice.

Implications from this research therefore suggest that teacher preparation needs to become personalised and practical, with an increased interdependence between the school and the university.

Open-Space Development and Utilization

The findings show that all groups indicated a lack of awareness of open-space and its use. They were unaware of the theoretical-philosophical basis for open-space environments, as well as the utilization of many features deemed characteristic of such environments. Teachers in open areas did not seem to be aware that open-space settings appear to produce pupil responses different to those in enclosed classrooms (Council of Educational Facility Planners, 1971). The implications are that teachers need to plan, teach, and behave in open areas in manners and roles different from those used in teaching in enclosed settings.

For teachers to develop different strategies for teaching in an open-space setting, there is a need to acquaint them with the possible uses of that environment. The first step in this process is the development of awareness of the characteristics of the spatial environment. The present study has established one means of effecting this awareness. It seems probable, from the requests of the subjects, that smaller booklets following the same format and incorporating discussions among teachers, students, and consultants would be more acceptable. One result of the use of the booklet has been a significant increase among the subjects in the awareness of statements associated with the open-space settings.

Research and descriptive reports show that schools having open-space areas differ in structure and use of facilities. In those schools which are deemed to be making most effective use of facilities and resources, strategies and expectations differ from those pertaining to enclosed classrooms. Such practices demand different preparation for teachers. Evidence and opinion regarding the schools in this study suggest that specific teacher preparation, at either the preservice or in-service level, was almost non-existent. Teachers were presumed to be able to work with different facilities without any specific formal preparation. There is an urgent need to develop specific training techniques to equip teachers with skills useful in these open-space settings.

The participants in the research identified features which they considered important in open-space settings. Adjustment to the environment, implications of personal space, and grouping and re-grouping were some features specifically associated with children and their learning. These findings supported the literature on aspects of open-space which require the teacher's attention. Other areas identified concerned teaching strategies, especially cooperative or team teaching, adaptability to the environment, and utilization of its facilities. The respondents became aware of some characteristics of the spatial environment but there seemed little evidence that any of these features were operating in the schools. There is little chance for student teachers to observe effective use of open-space until teachers in the schools are prepared to implement different approaches.

As open-space areas have been built in many schools, it seems reasonable to suppose that teachers will be required to teach in these environments. The flexibility of these areas is such that it is possible to treat them as enclosed class areas with minimum re-arrangement of furniture; this negates the purpose for which they were designed. An alternative is to provide specific, short in-service workshops, particularly for teachers newly appointed to these areas. Such workshops could be based on a structured series of learning experiences to establish awareness and skill in the use of open-space settings. These workshops could follow the pattern established by the unit booklet in this research. Possible topics for such workshops could include skill development in interpersonal relations, group dynamics, non-verbal communications, and specific aspects of organization theory which could be adapted from some of the studies on games theory, simulations, computer assisted instructional skill strategies, and training group theory.

The findings from the present study and the literature imply that teachers in open-space settings utilize these settings more effectively when they are aware of their environment and have been instructed in the skills necessary to adapt their strategies to it. The participants in the study were not aware of their environment in the terms of the literature on open-space, they had not received any preparation for their assignments, and they reverted to strategies and physical arrangements commensurate with enclosed classrooms. It therefore seems desirable to use some form of inservice and preservice preparation, such as a series of small structured booklets, to provide awareness of, and skill in, open-space development and utilization.

Curriculum Development

The process of curriculum development was indirectly monitored throughout the research. The findings suggest that implications can be considered from the standpoint of the curriculum unit format and from the content desired in such a unit.

The booklet consisted of articles, activities, and information sections. This format, with each section re-inforcing the other in some structured sequence, was seen as appropriate and convenient. The implication for curriculum design, which stems from criticisms by respondents, is that semi-self-instructional materials of this nature would be improved by specific discussion topics or questions at the end of each sequence. In this study, discussions between teachers and student teachers were suggested but seldom occurred. The inclusion of a university consultant in a regularly scheduled discussion was seen as desirable.

The objectives for the curriculum unit require greater clarity in relation to the needs of the participants. Comments indicated that the aim of each section of the booklet was clear, but the overall purposes could have been stated more precisely. As each setting is unique, it is obviously difficult to cater for each, but the curriculum designer should be concerned with adapting his material as closely as possible to the exigencies of the situations in which it is likely to be used.

The conceptual framework for the study assumed opportunities for all respondents to work in open-space settings. They did not occur. The researcher therefore requested that those participants teaching in enclosed rooms should seek to apply the materials to those areas as modified spatial environments. This adaptation caused some respondents consternation, which was reflected in their comments. The implications are that, in a curriculum project, the design variables should be controlled as closely as possible. Where discrepancies occur, either the design needs to be adapted or the data need to be interpreted, with provisions for modification.

A third feature relating to the framework was the evaluation techniques employed. Most respondents in this study were reluctant to complete the Individual Choice Diary, but were quite prepared to use check lists. The interview was suspected by some, but the modification to group rather than individual interviews was accepted. Again, the modification of the original intent, in order to meet the expectations of the groups, has to be considered by the curriculum designer.

A fourth design variable was the role of the researcher. From the beginning of the study, the role of the researcher was stated clearly to all groups. The contact which the researcher had with the graduates and with the schools to which they were assigned often concerned the researcher, and may have resulted in an over-cautious attempt to remain "apart" from this group of participants. The same concern was not so apparent with the undergraduates or their cooperating teachers. The implication is that the role of the researcher should be defined and he should not be involved with the respondents except in the pursuit of the research. This is particularly desirable when the researcher is also the interviewer and/or evaluator of responses on the materials which he himself has produced. Where possible, people external to the project should then be invited to check on the validity and reliability of the researcher's interpretations of the data.

A fifth concern for curriculum development was the timing of the research. Respondents felt that, rather than attempt to cope with the type of awareness material presented to them during a normal practicum, specific periods should be devoted to this activity. For general curriculum development, the timing of the initial "field test" may be of considerable importance. It is essential to monitor reactions of the groups to this aspect of the curriculum development process. Some criticisms of the curriculum materials may not have become evident if the research had coincided with other periods of observation or practical experiences. The personal attitudes of the respondents are also difficult to monitor; they vary so greatly and are related to so many other variables which cannot be measured, that they tend to neutralize each other.

The findings regarding the content of the curriculum unit imply that space as a concept requires elaboration, as does its application to other than open-space settings. Practical and local articles were requested by the respondents, but there is a dearth of literature on these aspects. Reduction in the length of some articles in the booklet through editing or summaries, division of the booklet into three or more separate booklets, and retention of the three section format were clearly favored.

One justification for the study lies in the results of the pretest-posttest measures on awareness of the twelve items on aspects of open-space. These findings suggest that the content of this curriculum unit produced a significant change in the level of understanding or confidence in open-space settings. As suggested earlier, such change cannot be attributed solely to the curriculum unit because of numerous unmeasured variables. However, among the respondents who used the unit in school settings where open-space innovations were being attempted, the strongest positive change occurred. The influence of the curriculum resource unit combined with the setting therefore can be claimed to be considerable. The inference can be made that, for the subjects in this study, a semi-self-instructional curriculum resource has assisted in the development of an awareness of the spatial environment as part of a program of teacher preparation.

RECOMMENDATIONS

The recommendations have been grouped in the following way: those relating to teacher preparation, those pertaining to open-space, those more specifically intended for curriculum development, and those which have application for further research. For each group, a general statement precedes the specific operational recommendations.

Teacher Preparation

That the rationale for teacher preparation as a unified academic and professional undertaking, and of each component within each program, be scrutinized continually to ascertain its relevance to meet the perceived needs of society, the profession, student teachers, and pupils.

(1) That a series of structured in-service workshops, directed towards specific characteristics of open-space, be promoted jointly by university and school personnel to:

(i) develop an improved awareness of the nature, range, and possible uses of open-space facilities, and

(ii) train teachers in particular skills useful in the spatial environment.

(2) That further consideration be given by the Faculty of Education to:

(i) extend the integrated, professional programs at both the undergraduate and graduate diploma levels, and

(ii) make available directed observations, practicums, and extended practical experiences, as options, to student teachers in every year of professional preparation.

(3) That the deployment of university consultants be re-examined, with a view to attaching consultants to particular elementary schools for consistent work with student teachers during practicums and with school staffs in-service.

(4) That, in those preservice programs incorporating an open-space component,

(i) student teachers be given opportunities to observe a variety of physical designs and facilities, using directed observations extending over at least two or three full days, and

(ii) teachers and university staff jointly plan the practical experiences in order to make the maximum use of the facilities and resources existing in the schools.

Open-Space Settings

That continuing efforts be made by university and school personnel to promote optimum use of the physical environment in open-space schools.

(1) That teachers operating in open-space settings be encouraged to review the facilities and resources at their disposal and to plan strategies to use the open-space environments.

(2) That, following the provision of in-service and preservice opportunities for teachers to become trained in the use of open-space, teachers be sought to volunteer to set up several schools, utilizing in a variety of ways the physical designs and

facilities already existing, in order to demonstrate such strategies as team or co-operative teaching, group dynamics, and integrated curricula.

Curriculum Development

That greater attention be given to develop different avenues for designing and conveying curricular materials appropriate to pre-service and in-service teacher preparation.

(1) That curriculum designers should seek to involve the users of the proposed curricular materials at the planning, as well as at the field testing and implementation phases.

(2) That in designing courses for preservice teacher preparation, university professors and consultants become conscious of:

- (i) the influence of school settings and resources on their own university course content and aims,
- (ii) the benefits which may accrue from discussions with teachers on course objectives, content, and assignments relating to the schools, and
- (iii) the perceived needs and previous experiences of the student teachers, so that deliberate efforts can be made to provide more personalized curricula.

Further Research

That the field of teacher preparation curriculum be explored continually to provide definitive data feedback for developing curricular programs, materials, and resources.

(1) That the design and intent of the present research be modified so that similar research may be pursued on the open-space environment. Modifications should incorporate pre-planning with school staffs, the production of smaller unit booklets with the same format, and scheduled discussions on the unit among all participants.

(2) That systematic, medium-range research be established to monitor the roles assumed by university consultants.

(3) That specific in-depth research be initiated, with student teachers volunteering for the integrated professional programs, in order to establish the presumed benefits and disadvantages accruing to students, university staff, and co-operating teachers from such programs.

(4) That different patterns of teaching practicum continue to be planned, monitored, and evaluated, with provision for feedback from teachers and intending teachers.

(5) That a comparative research design be implemented to determine the use being made of the physical environment in different open-space settings.

(6) That a series of case studies be attempted to obtain data on the impact of the open-space environment on children and teachers.

(7) That an experimental design study in curriculum development, on any specific topic or content, seek to establish the perceptions of various respondents actively involved in developing objectives, content, and instructional strategies for such

a topic.

(8) That curriculum resource materials, using multi-media facilities, be designed and tested to assist teachers to develop awareness of, and skill in, an open-space setting.

CONCLUSION

The use of a semi-self-instructional curriculum resource is one means of developing awareness of the open-space environment. Using this resource, the research has demonstrated that change can occur in teachers and student teachers who apply the materials in the practical school setting. The study has provided data on open-space, curriculum development, and teacher preparation which suggest that the conceptual framework, the paradigm, and the curricular resource unit developed for the research are appropriate for modified implementation.

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APPENDICES

APPENDIX A

THE UNIT BOOKLET: THE OPEN-SPACE ENVIRONMENT

A
CURRICULUM COMPONENT FOR TEACHER PREPARATION IN OPEN-SPACE SCHOOLS

UNIT 1: THE OPEN-SPACE ENVIRONMENT

Bernard L. Masters
October 1972

PREFACE

This is a semi-self-instructional booklet. Some content material is provided. The booklet is designed to direct your attention to particular readings and to direct your observations and experiences in a spatial school environment.

The booklet is also a working document. It is intended for you to use. Some of its pages are colored. These are your working pages. If they are insufficient for your purposes, insert more.

As you look through the table of contents you will become aware of a series of structured experiences which form the plan of the booklet. This plan is presented as a diagram on page 4. It is this plan and your reaction to it which concern us at the present time. You will notice some items of an evaluative nature. These are intended to assess the plan of the booklet. There is no evaluation of you as a learner or as a teacher: the focus of evaluation is on the plan of the unit and on your response or reaction to it and to the activities suggested.

Because this unit is designed in a particular way, it is important that you read quickly through the booklet to obtain an overview.

Then, select those particular segments (or all the segments) which you wish to work through in detail. This provides you with the opportunity to skim over those other segments which may be familiar to you because of your previous studies and experiences. For the segments you read in detail, use the work sheets provided.

The optional readings are available from the researcher or in the University Education Library. Most of them are quite short and easy to read. The more you can read, the broader will be your awareness of the possibilities and limitations of the spatial setting. An extensive bibliography is provided at the end of the unit if you wish to read further.

Finally, although this is a self-instructional unit, you will be working with other people. They, as well as the materials suggested in the unit, will contribute to your awareness of the spatial settings. You should seek interaction with these people--children, teachers, administrators, observers and the researcher--they are all valuable resources.

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PURPOSE

This unit is concerned with space as an aspect of the school environment. Each school is different; yet there are some features which may be observed and which may be reasonably common to most schools.

The purpose of this unit is to develop your awareness of the spatial environment, especially in open-space schools.

The unit on the spatial environment is intended to present a series of structured learning experiences appropriate to school settings. These experiences may be undertaken in conjunction with an observer or co-operating teacher in that setting.

The specific objectives for this unit are:

(1) To assist you to recognize physical, personal, social and psychological influences operating in a spatial school environment.

(2) To draw attention to the possible influence on pupils and teachers of such aspects as equipment and facilities, movement, noise, visibility, communications and resources.

Both these objectives may be subsumed under the general statement of developing your awareness of the school's spatial environment.

TERMINOLOGY

There is some confusion and multiplicity in the terminology connected with "open-ness". Some of the more frequent terms and their more usual connotations are given below. However, some writers use terms differently or even interchangeably; you need to watch for this in the literature and to interpret what each writer means by the terms he uses.

Space: a location in which teachers and pupils may interact (Eberle).

Personal space: the area which a person establishes as his own and in some way identifies it to be his. It may also be an "emotionally charged zone around each person" helping to regulate distance or spacing of individuals (Sommer).

Psychological space: the perception which an individual establishes of his own location and of the psychological forces influencing his behavior (Lewin).

Open-space schools: (an architectural design term) a structurally open, large instructional area with no permanent interior walls or divisions separating several teaching stations. Schools of this basic structural design often have self-contained classrooms in close proximity to the open-space unit. A synonymous term is open-area schools.

Open-plan schools: (an instructional term) a school in which the instructional program and timetable is extremely flexible or open. The school may be either conventional or open-space in construction.

Open education (school or classroom): (a philosophical term) an integrated and personalized educational process stressing child-initiated activities, intense involvement and self-directed, responsible learning. There are few subject barriers and few restrictions on time or space. Adults and older children are looked upon as resources. Open education is an outgrowth of the British infant school concept of the integrated day. (Perrone)

Resources: the facilities of time, people, money and materials available, including the physical characteristics of the school.

OVERVIEW

Stage	Time Period	Type of Activity
1	2 - 3 hrs Pre-practicum	Preliminary reading + Lecture presentation
2	3 - 4 hrs Practicum 1st week	Awareness activity + Readings + Directed observations
3	2 - 3 hrs Practicum 2nd week	Readings + Small group activities + Class teaching
4	1 hr Practicum or post-practicum	Evaluation + Interview

AWARENESS ACTIVITY

On your first day in your spatial setting, or prior to this if you have the opportunity, take ten minutes to sit down in this area when no children are present and complete the attached "awareness" activity sheet. You may prefer to complete these sheets by reflection--away from the physical context; if so, make a note to this effect on the activity sheets.

School: Name:
Grade: Group:
Teacher: Date:
Completed in the area: yes no

AWARENESS ACTIVITY

To be completed for your open-space setting when no children are present and preferably before you have observed any pupils in this setting.

1. Draw a quick floor plan of the total space facility.

    (1) Using dotted lines, indicate where you may anticipate "divisions" in teaching stations, if more than one teacher occupies this spatial setting.

    (2) In your teaching station space show the teacher's table, chalkboard and any other relevant floor plan details.

School:
Grade:
Teacher:
Completed in the area: yes no

Name:
Group:
Date:

AWARENESS ACTIVITY

2. (1) How many children would you anticipate to occupy

(a) your teaching space?

(b) the total space facility?

(2) Sketch quickly two floor plans you might prefer to accommodate,

(a) small group research activities in Social Studies,

(b) a "class" presentation involving teacher narration and pupil verbal response.

School:	Name:
Grade:	Group:
Teacher:	Date:

Completed in the area: yes no

AWARENESS ACTIVITY

3. List as comprehensively as you can those items in your own teaching station you consider relevant to:

   (a) physical facilities conducive to teaching-learning

   (b) physical facilities impeding teaching-learning

   (c) the most outstanding features you have observed.

PRELIMINARY READING

The material listed below should be read before you come to the lecture presentation. Additional readings will be provided later in the unit.

In these initial readings, look for the following:

1. Physical descriptions of buildings and facilities
2. Comparisons between conventional and open-space areas
3. Means of utilizing the facilities and the environment.

There will be other features in each reading which are important--but they may apply more directly to other units and may be referred to later. You should read the articles listed below and presented in the following pages:

Ingalls, E. M., So You're Teaching in an Open Area. The Manitoba Teacher, Sept.-Oct. 1969, [illegible]:4-6.

Shaw, Gayle G., A Teacher Looks at Open Space. CEFP Journal, Sept.-Oct. 1971, 9(5):15-16.

Eberle, R. F., The Open Space School. The Clearing House, Sept. 1969, 44(1):23-28.

Hersom, N., Open Space Schools: Tools for Teachers, Environments for Learning. Elements, Oct. 1971, 3(2):5-6.

SO YOU'RE TEACHING IN[7] AN OPEN AREA

by Eleanor M. Ingalls

from The Manitoba Teacher
Sept.-Oct. 1969, 48(1):4-6

MORE AND MORE SCHOOLS in Manitoba began operation as open-area schools in September this year. The open area varies in size, shape and decor but the underlying philosophy is the same for all schools.

As a teacher moving in to open classrooms for the first time, you have probably become more conscious of your own strengths and weaknesses. Like most teachers, you will at first feel 'exposed' — if not to the scrutiny of visitors and administrators, certainly to other teachers. This is an understandable and real reaction to an open classroom. Your inability to close a classroom door and retreat into your own room may make you uncomfortable, but only for a short while. Any of us might have gone into a traditional classroom poorly prepared but only our children knew it. Go into the open area poorly prepared and the whole school knows it! So expect to feel some pressure — but relax because you have more personal resources than you know.

By the end of the first day in an open area, you will find that you must change the focus of your class away from you. Teachers in open areas must do less talking than in traditional classrooms. If we are honest with ourselves, we must admit most teachers talk too much anyway. The teacher in the open classroom should do less telling and provide much more opportunity for children to discover from each other and for themselves. I do not mean that children 'learn it alone'. There are times that 'teacher telling' is the most efficient way of providing the information necessary before children may proceed to new material. Neither do I mean that the teacher is not involved. The teacher must be deeply involved — nothing should happen by accident. Children will learn because you planned for the learning to happen.

Your role now becomes that of a facilitator or catalyst. You guide and redirect student efforts so the learning they need is acquired. You will be constantly on the move, working from group to group, evaluating, questioning, redirecting, explaining. Therefore, the contact between teacher and student is usually more constant and closer in the open class than in a traditional setting.

Almost from the beginning, you will share ideas, share students, share responsibilities with other teachers. You no longer work alone with a group of students put in your charge for a school year.

All teachers really share all the children in the open area. You will begin to plan for meeting their needs by working cooperatively by grouping students for instruction. Grouping will vary. In skill subjects such as mathematics, ability groupings may be used, in other subjects heterogeneous groups. But most important of all, group membership should not be static. Plan for mobility of students within groups as each student's needs and competence change. This means that you must be aware of the needs of your students. Standardized test results, both formal and informal diagnostic testing, will help you to group students and plan their instruction. Your principal, your guidance staff can help you.

Team teaching or cooperative teaching will be a basic consideration.

Teams really start by two of you working and planning together to regroup your students and use their needs and your special talents and interests to do a better job.

The open area was intended to facilitate this regrouping. It provides flexible space to permit groups of various sizes to be accommodated. The central resource area facilitates discovery and self-study. Its accessibility to all students and teachers is one of the unmistakable advantages of the open area. You must plan for the use of the materials in the resource center. How you use it may well be determined by the materials it contains. It should offer many different kinds of materials, books, filmstrips, tapes — many alternatives for both you and your students.

The resource center is a learning center — an opportunity for quest activities. Plan so that students use it in this way. It should not be merely a 'browsing' area where bright students spend free time. There must be direction and purpose in what is done.

One common fault, shared by many who teach in an open classroom, is the confusion of freedom and permissiveness. Movement about the open area is important as students go to the resource center, from one class area to another. But again it is movement with a purpose. The open area is not a license to 'do as you please'. Students must quickly be taught to move quietly and purposefully. There are usually fewer restrictions on children. They should be permitted to exchange ideas, to be more self-directive, to be free to select. They are free to learn more, to do more work, to be involved in the planning and executing of what they will learn. But in all this you maintain an indirect control.

You may find that at the end of the day you are tired from the hum of activity around you. At times, open areas are noisier than some teachers would like. This may mean that teachers as a group must decide the noise level they can tolerate. If your school does not have a 'relief' area, you may find the open area wearing. There are times when withdrawal from the open area to a quiet, more intimate spot is necessary for both you and the children. This 'relief' area can also be a spot for your class to have noisier activities.

Like all teachers in open areas, you have to be willing to try different approaches. Don't expect too much too quickly. Both you and the children need to adapt to the new environment. Be willing to try, admit it didn't work and plan another approach. Be willing to learn from others. The open area will expose you to learning from other teachers and they, in turn, will learn from you.

One of the needs I see is for you to foster a 'sense of community'. You must see yourself and your class as a part of a larger whole and recognize your rights and responsibilities to the whole group. The open area will allow you to do many things in many ways. It will help you to focus your attention on what you are doing and why. The time of 'pedagogic solitude' is fast disappearing.

A TEACHER LOOKS AT OPEN SPACE

by Gayle G. Shaw
Teacher, Lake Elementary School

I felt as if I had jumped across a decade as I entered this strange new concept in school planning called "open space."

From 1962 until 1969, I had been a teacher in four elementary school systems, but very similar school structures—all with green-walled, box-shaped traditional classrooms.

I then left the teaching profession for one and a half years. In December of 1970, I applied for a teaching position in Mentor, Ohio. The assignment I was offered was in an open space school with non-graded, multi-aged centers and differentiated staffing. A quick tour by the principal through this bright, carpeted structure left me with a confused, excited feeling, and also many questions.

Silence was an obsolete work in this educational structure. Children laughed aloud, talked constantly, jumped, danced, moved as they desired, and supposedly learned. Obviously, the foremost question in my mind as an educator was how do I fit into this meaningful chaos in a teaching capacity? The answers did not come immediately or painlessly. But some came, and rewarded me with the most exciting and fulfilling moments I have ever experienced in my profession.

January 4, 1971, I entered Lake Elementary School. This school has five learning centers and a kindergarten area all opening into the media center area.

I was assigned to Learning Center A. This center is for first and second-year students ranging in ages from six to eight. The room is sixty feet by sixty feet with wall to wall turquoise-blue commercial carpeting. The space is filled with about fifty trapezoid-shaped tables to accommodate approximately one hundred students, two students per table.

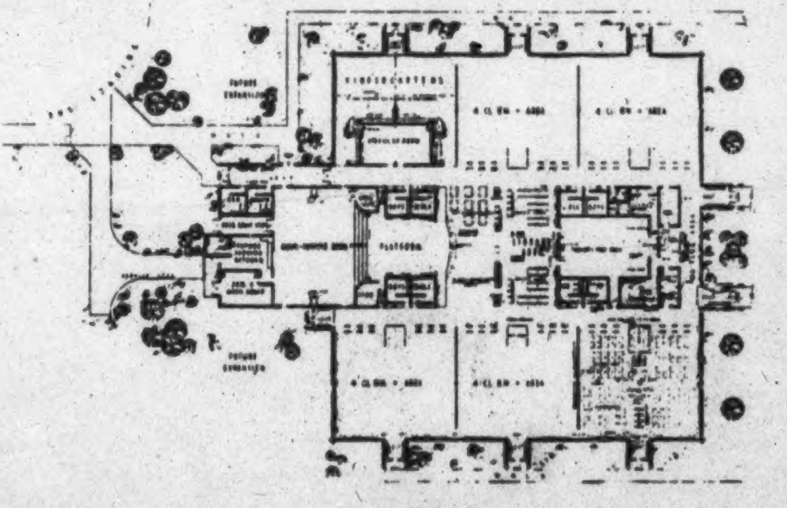
When I arrived there were three certified teachers and two paraprofessionals from Cleveland State University already working with the students in Learning Center A. In the morning, the children were arranged into groups where concentration was on language arts. In my particular morning group, I had eight first-year students, eight second-year students, and four students working in a readiness program for first-year.

I had always been a believer in trying to individualize curriculum to meet the needs of each child, my constant aim even in the traditional school. However, I had never encountered such a wide range of ability differences while in the lock-step framework of the traditional school. Within the three months that followed, I worked out a system that seemed to work for me, the space involved, and—most important—the children involved.

The first thing I had to really understand was the reason for open space and all its fringe benefits, such as the constant noise and motion, and how to make everything work in a positive direction.

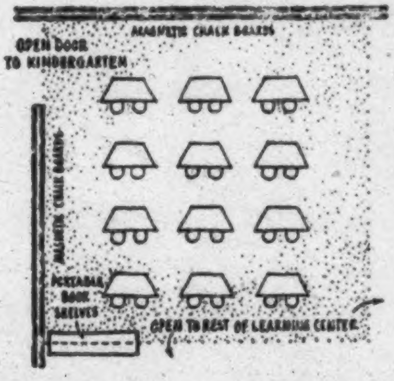
I discovered the following positive values in open space, and they enabled me to make a commitment to this new concept:

- Children are in an environment where freedom of expression is not only allowed, but encouraged. The role of the student is changed from a passive listener to an active participant in education.
- The fear of failure is removed so that the children can be encouraged to learn for the sake of gaining knowledge and the excitement of learning rather than for the sake of grades.
- A time limit for certain learning is removed. A child is no longer put into the lock-step procedure of education which forces him to remain in one grade for a period of nine months, regardless of his readiness or progress. He can proceed at his own rate without regard to grade level.

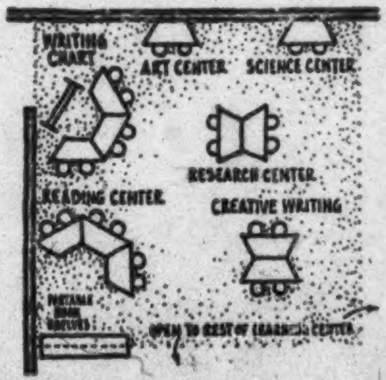


With the planned use of space and proper use of materials, the constant noise no longer seems an environment of chaos, but rather the beautiful music of children's ravenous appetite for learning.

A learning center is a space which should provide the means for developing the ability to solve problems creatively through individual exploration and problem solving. Learning Center A, for first and second-year students, looked something like this:



My area in the learning center was right next to the kindergarten center with an open doorway between the two. The noise factor had to be considered in planning my use of space and curriculum design. The free play and singing from the kindergarten was almost constant. This, added to the noise from the four other areas in our center, made group instruction virtually impossible. However, this proved to be a blessing in disguise. I was forced to work out a plan for

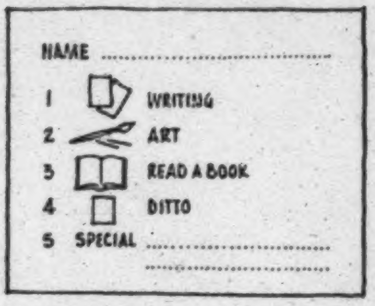


individualizing due to two factors: the extreme ability differences and the pleasant sound of children involved in learning which adults term noise.

I had twelve tables, two walls of pale beige magnetic chalkboard with cork bulletin boards at either end, and good sectional lighting. I decided to arrange the tables into small interest centers, giving thought to the flow of traffic throughout the area.

Three tables formed our reading center. From the local library I obtained a collection of fifty books. On one of the three tables I taped a sign on which were drawn the symbol of a book and the words "Reading Center". In the same pattern, I set up a "Science Center," "Art Center," "Printing and Writing Center," and "Creative and Research Center."

I tried to devise lesson plans that could be tailored to the individuals in the group, yet not take eight hours per evening to prepare. As a start, I took a ditto master and divided it into five parts. For my readiness students, I used symbols as well as printing on each of the six plans since they could read very few words. A daily lesson plan looked like this:



NAME ....

1 WRITING

2 ART

3 READ A BOOK

4 DITTO

5 SPECIAL ....

....

I made five individual plans or contracts like this, only reversing the order of activities on each of the five.

For my second year students, I devised more difficult individual contracts. A sample looked like this:

NAME ....

1 THINKING QUESTION ....

....

2 READ A BOOK

3 ART

4 DITTO

5 FREE TIME TO THINK OR DO

6 CREATIVE STORY

7 DICTIONARY— LOOK UP ....

Write down guide words and word meaning

Since there was a different order to each of the plans, the interest centers were never too crowded. Mike sat at the creative writing center while Randy worked at the art center working on a model car. Lorrie sat in the reading center while Steve sat on the floor finishing his boardwork. Students worked at their own speed, and therefore, were not frustrated. After each item was completed, the student crossed it off the contract, and went on to the next item.

I decided to make good use of the magnetic boards in our area. I purchased bright red, blue, and yellow plastic magnetic clips. Each morning a student was chosen to clip up the individual contracts. After our opening session, the students would find the contract with their name on it, unclip it, and go about their work. When all items had been completed on the contract, the student would return the contract to the magnetic clip attached to the chalkboard. Each child was responsible for his or her contract from the time it was unclipped each morning until it was returned to the board at the end of the morning.

By setting up our areas into interest centers, several table tops were laden with books, games, art supplies, paper, cardboard, newspapers, and magazines. Consequently, we had a problem of not enough places for the children to sit and write, create or draw.

I went to the local lumber yard and asked to have ten 12" x 12" masonite boards cut for a cost of 20 cents each. Since the entire area was carpeted, the children didn't need to sit at tables. This way they could lie on the floor and write on a board, sit on the floor and model clay on a board, or sit in a chair and use the masonite boards as lap boards while copying boardwork. I have never put two dollars to better use. The children loved the idea of a portable desk and invented many other ways to put them to use. During recess one day, Sam and Steve even put five of the boards together to make a track for their racing cars!

What I once termed chaos, when I first encountered open space, I now called the sound of children's excitement and involvement in learning. Does this program of contract teaching really work? I will only say that I have tried many modes of motivation during my eight years of teaching, and this one works in the way I believe all education should work—the student is self motivated. I was always able as a teacher to get students excited about a proposed project I wanted them to do. However, the fallacy in this type of motivation is that in life there isn't always a teacher present to motivate. One must develop an inner motivation to learn all one needs in life.

In the open space environment, following an individual contract program, the children seemed free from frustration. They were working at their speed on projects in a position they were comfortable in sitting, standing or lying down. It was their "thing" and so they cared!

Sam, a readiness student, took extreme pride in completing his contract, whether it took one or two days. His printing improved overnight, and his behavior, which had once been a source of real concern, was now impeccable. Sam was involved in the thrill of learning and improving himself. This left no time for misbehaving.

Sitting at a desk, listening to a teacher lecture on isolated facts, only to be passively obtained, never trained anyone to cope with life. Yet this has been the traditional picture of the student in formal education. The children I worked with in open space had time to create, to dream, and to express what they were dreaming and creating. My role as teacher changed to manager, counselor, listener, and organizer. I was no longer a source of verbal facts, but rather a wayshower for finding those facts.

As an educator, I now believe the two most important tools we should equip children with are the thirst for learning and the belief in self. I believe open space schools provide the environment that makes these tools possible to obtain.

Not all problems are solved nor all questions answered in the open space concept. They probably never will be.

Near the end of the school year, several teachers were sitting in our teacher's prep room engaged in a discussion concerning plans for a new open space school in Mentor. There were four points all teachers seemed to agree upon.

"Open space can't meet all the needs of all the children all the time." Therefore, there must be some enclosed-rooms in all open space schools that are soundproof. There are times when it needs to be extremely noisy or quiet. The human need for privacy is as strong at times as the need for socializing.

The second point made was the need for a flexible and easily moved partition about four feet high which could be folded into different sections. This could be used to set apart small groups or individuals desiring semi-privacy, but not necessarily a totally quiet atmosphere.

It was unanimously felt that the media center should be accessible to all learning centers. It should be a quiet and comfortable area, aesthetically attractive.

All agreed that when an architect is drawing up plans for an open space school, he should spend at least one week with teachers and children already working in open space to gain their opinions as to priorities.

I could never return to a traditional atmosphere. I am a convert to open space! I believe the real world is an open space environment, and I have finally found an educational system that is teaching children how to function in the real world.

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THE OPEN SPACE SCHOOL

By ROBERT F. EBERLE

Introduction

We shape our institutions and thereafter our institutions shape us. This admonishment, attributed to Winston Churchill, is being paradoxically supported and challenged by the instructional design being manifested in the *open space school.* The basic design for the open space school makes provision for a series of non-partitioned teaching stations or, if you please, instructional spaces. The overall enclosure provides square-footage equal to, or greater than, an equivalent number of classrooms in a traditionally designed school.

To construct an image of this innovative plan, think along with me. Imagine, if you will, an average size high school gymnasium. First, move the walls in to the edge of the playing floor. Next, drop the ceiling to living room height and install acoustical tile. Finally, lay wall-to-wall carpeting on the floors and locate a materials resource center or a "thinking room" at the center jump circle. Add in adjoining construction the necessary offices and service facilities and you have an oversimplified approximation of an open space school. I should hasten to add that open space schools come in a variety of shapes and sizes. Instructional "pods" in hexagonal and circular shapes, as well as the rectangular, are being used at both the elementary and secondary levels.

EDITOR'S NOTE

Of the various educational innovations of the past decade, revolutionizing the concept of the school plant has lagged behind those involving curricula improvements. Yet a departure from the traditional internal arrangement of a building to a more "open" formulation can generate new educational excitement for both teacher and student. The author is assistant superintendent of Community Unit School District No. 7 in Edwardsville, Illinois.

Philosophical Foundation

Torkelson (9) reminds us that the term "space" has come into use as a substitute for the traditional word "classroom." Space, then, is a location for teachers and pupils to interact, it is also a location for the interface of pupils with individualized learning experiences. Using the "space" concept as a benchmark and beginning, it becomes possible to formulate a philosophical foundation upon which the educational program may be built.

Accepting the premise that the school should be reflective and supportive of the larger society of which it is a part, the philosophical foundations of the open space school lays stress on the twin conditions of individuality and flexibility. That the conditions of individuality and flexibility mutually serve the purposes of the learner, the community, and the larger society are accepted as a truism upon which an open space school may be constructed and its program designed.

Individuality

A parallel may be drawn between the "open" and "closed" societies and "open" and "closed" schools. Fantini (4) states that, "A closed society is a totalitarian social order where the individual is subservient to the state, whereas the 'open' society is one in which the individual is valued over the state." The classroom may be viewed as a miniature society reflecting the larger society of which it is a part. The same may be said of the school as an organizational unit.

The open space school consents to the development of attitudes, values, and behaviors useful in supporting and advancing an open society. Through understanding and purposeful design, the staff may plan instructional programs to meet individual needs and to encourage pupil responsibility for their own learning. Such a plan makes provision for individual initiative and freedom with self-direction. Baughman and Eberle (1) liken this approach to the "if"-"then" procedure of the hypothesis maker. "If teachers direct, control, specify, and measure; then pupils are likely to follow, conform, and comply. If teachers guide, support, stimulate, and encourage; then pupils are apt to explore, experiment, abstract, and create. Individuality can best be respected and cultivated when the teachers' role shifts from familiar "sage on the stage" to the helping relationship of "a guide on the side."

The open space school is pupil-centered in that multiple learning routes provide pupils with the opportunity to learn in ways which best suit them as individuals. It is action-oriented; instructional strategies are in sharp contrast to the "listen and learn" and "seatwork" styles of teaching. The arrangement of furniture within the space creates "open highways" to and from the tools of learning. Pupils are instructed in the purposes and use of a host of instructional aids and are encouraged to use them individually or in small groups. The program is exploratory. The cultivation of the intellectual processes of imagination, exploration, judgment, and evaluation are integrated into the learning scheme. Pupil self-expression, creative production, and inventiveness are recognized and rewarded.

Flexibility

The school must not operate in isolation of the larger society. The changes which are occurring in science, technology, communications, and social relationships should not be ignored. Similarly, the school cannot ignore the changes which are occurring in educational technology, learning theory, and research oriented instructional strategies. It becomes necessary to place our trust in the processes by which new problems are met. We are now realizing that change overtakes us so quickly that answers, knowledge, methods, and skills become obsolete almost at the time of their achievement.

The traditionally designed school composed of well defined and rigidly constructed classrooms cannot hope to provide the desired flexibility needed to adapt to and live with desirable change. As Churchill stated, "our institutions shape us." This limitation, however, is not true of the open space school. When viewed as "a little astrodome for living and learning," the open space school provides maximum flexibility for internal change and adaption.

The opportunity for "complete adaptability" may be more nearly realized when the interior furnishings possess the qualities of portability and versatility. These qualities contribute to the "tinker toyish" arrangement and rearrangement of furniture within the open enclosure. Little learning environments are created in support of the learning scheme that is being used at the moment.

A plan for maximum flexibility is predicated on the need: (1) to use differing instructional approaches and learning aids, (2) to provide a variety of instructional routes to suit individual differences, (3) to make possible a shift in environmental categories, and (4) to make it possible for pupils to follow detours in the direction of learning.

The principle of flexibility may be further exemplified by the use of contrasting teaching styles and strategies. Soar (8) and others suggest that the thinking and creative skills of pupils are developed by the gathering of extensive, relevant, concrete information from which abstractions and generalizations are drawn. Represented here are distinct and contrasting styles of teaching. During the information gathering stage, the teaching style will need to be direct; however, a shift to indirectness becomes necessary as pupils engage in the higher level thinking processes. This principle is: the more concrete or convergent the learning objective, the more direct the teacher behavior; the more divergent the objective, the more indirect the teacher behavior. In the open space school, it becomes possible to shift both the instructional style and the learning environment to harmoniously support the teaching objective.

The teacher in the open space school finds it convenient to fabricate the learning space to suit the activity of the moment. Flexibility is limited only by the exterior walls and the imagination of the teacher. The shape of the institution does not shape the nature of the learning activities that may occur within.

Needed: A New Breed of Cat

It cannot be expected that all teachers are qualified or desire to teach in an open space school. Many may find the required changes in professional demeanor to be much too threatening. Tried and true teaching behaviors of the past may be too well ingrained to expect desirable behavior changes to come about. Such being the case, a dilemma is born. Frymier (5) elaborates on this problem and declares that:

> New concepts, techniques, and media are only useful to those who are psychologically capable of perceiving the proposed educational changes. If they are defensive, closed, inadequate, and fearful they will not be able to get the new idea 'inside' their central nervous system to give it new meaning to them. Unless they can do this, the innovation can only be utilized mechanically and unthinkingly, or not at all.

Contrariwise, the recent graduate may be shocked to find that the training institution did very little to prepare him to teach in an open space school. This shock will be compounded when the neophyte compares the teaching methods to which he has been exposed in the past and finds them in sharp contrast to the methods considered necessary in the open space schools. In the vernacular, a "new breed of cat" is needed—one that has the security to be insecure and the ability to associate the disassociated.

The philosophical foundations of individuality and flexibility clearly set forth the personal qualities needed to teach in an open space school. In part these qualities are described as follows:

Risk taker. All is not known concerning what will and what will not work in the open space school. It will be necessary to take chances and to experience some trial and error teaching. This means that all that is attempted may not succeed. To have tried and failed is at least to have tried.

Able to Accept Uncertainty. It cannot be expected that a well formulated smooth operating program will be made operable in a short time. Many questions will remain unanswered and many unknowns will exist. The uncertainties may outweigh the certainties in an open space school. This situation should be considered as a condition of flexibility upon which the program is predicated.

Curious and Creative. Few bounds exist for the teacher seeking to originate new and productive instructional schemes. Curious about untried schemes and willing to explore and examine techniques and methods that may lead to new and improved things and ideas, the creative teacher invents new arrangements, produces unusual solutions to problems, and incorporates novel but relevant approaches to teaching and learning.

Energetic and Willing to Attempt the Difficult. The teacher in the open space school must possess deep and conscientious convictions about his work and be concerned with the learning welfare of each individual. He must have an abundance of energy to pursue his own learning and to initiate new and improved teaching methods. The demands on his energy will be great.

Precedence, Premise, and Promise

Precedence

The open space school should seek to retain those many practices of the past which square with the best of contemporary learning theory and educational psychology. There are, however, many new research oriented organizational arrangements, instructional styles and strategies, and teaching and learning methods that flourish under the conditions of individuality and flexibility. There are also some conditions which require behavior changes in teacher-pupil and teacher-teacher relationships. While many of these behaviors are without precedence, much promise is held for their improvement of pupil productivity.

It is recognized that the open space school is indeed a fertile field for investigation; i.e., Does the open space school bring about better social relationships? Does the self-image of the pupil improve under the open conditions? Do pupils achieve as well in the acquisition of the basic learning skills? Are the personalities of pupils modified toward the characteristics of openness, self-confidence, and creative production?

Most of the answers which will eventually determine the success of the open space school are not in. It will be some time before a true measure of accomplishment and productivity can be made. Lacking definitive evidence, but using the best available information, it is possible to make some speculations that seemingly support the concept of openness and provide guidance for the operation of the open space school. These speculations are set forth as operational premises for the open space school.

Operational Premises for the Open Space School

(1) To maintain a "flexible learning environment" it becomes necessary to exercise great care in the selection and use of all furnishings. No item should be so large or unmanageable that it cannot be moved and relocated by two fifth grade boys. The use of furniture, book cases, storage cabinets, and the like, should lend themselves to immediate adaption as room dividers or "space definers." With the possible exception of portable chalk or tack boards, no item should be over four foot tall.

(2) Change for improved learning opportunities evolve around pupils and the planning of programs to meet their individual needs. The implementation of such programs can best be accomplished in a flexible environment which can be shaped to enhance the particular program being introduced. Open spaces serve to facilitate the introduction of such programs as: flexible-modular scheduling, individually prescribed instruction, individually guided instruction, programmed learning, contract learning, small group-large group instruction, inquiry training, problem-solving instruction, team teaching, and non-graded approaches to instruction.

(3) Space psychology acknowledges the organization and reorganization needs for shaping the sociological dimensions of the learning environment. In the open space school the qualitative attributes of the learning environment are given consideration—how kids feel is important. The kinds of people needed to cause the school to function fully will first have to be fully functioning and psychologically secure individuals themselves—people that do not become overly concerned when their "slips" show. The "goldfish bowl teaching situa-

ion" allows teachers to see and to be seen. This is not unlike the "basic encounter experience" utilized in sensitivity training. Here one's own performance is open to observation and scrutiny.

(4) The open space school incorporates a built-in, automatic plan for informal in-service training. Not only do pupils learn from each other, so do teachers. When it becomes necessary for teachers to cooperatively plan for the use of facilities, when the teaching techniques of others become observable, and when the creative use of time and space become a matter of mutual concern, staff learning of an informal, but important, nature is bound to occur.

(5) Readiness to teach in an open space school should not be left to accident and chance. Instruction in group dynamics provides the understandings needed to operate in close association with one's peers. It also provides free and open communication concerning one's behavior. This is most important in the open space school where inter-personal relationships could be a source of aggravation and discomfort. Instruction in problem-solving processes is particularly helpful in preparing teachers to meet the many perplexing situations that may arise. When teachers become aware of their ability to identify pertinent problems, to produce creative ideas, and to evaluate and implement solutions to problems, the many challenges of the open space school provide a source of motivation and the opportunity to find better ways.

(6) It appears that teachers in an open space school will need perceptual qualities of vision and abstractness coupled with planning and organizational talent. One must be able to *see* if the space arrangement is contributing to the learning task. One must be able to dissassociate himself and stand off from the class for the purpose of observing and evaluating. Traffic patterns through and across the space must be assessed as well as the environment of the "little learning spaces" that are created. To expect that the many arrangements possible through the flexible use of space will automatically incorporate ideal learning situations is a major error. The lack of vision and organization will result in a "no man's land" of tables and chairs and a hodge-podge of unrelated, dissenting activities vying for space, time, and attention.

Promise

Rogers (7) speaks of change as "the major component of his educational dream." He further states that "A terrible urgency exists for *changingness* to become the central element and aim of American Education." The open space school is designed for change and provides for conditions and processes which are fluid, adaptive, and continuing. In practice, as Rogers so vividly states, it would be in a state of "continuing, constructive turmoil."

While not taking issue with Rogers' notions of needed changingness, it appears that he has recognized a limited part of the problem. If the open space school is to succeed in providing quality education, it becomes necessary to bound the change process and ask the question, "Why?" It is not enough to say. "We hope to improve," or "We think it will be better." The promise of the open space school can come about only when learning objectives are clearly stated. It is a case of knowing where you are going and being sure that you're moving in the right direction. In the words of Mager (6), "A usefully stated objective is one that helps us to see where we are heading and tells us how to know when we have arrived." This can best be done, according to Eberle (3), when objectives are written in measurable and verifiable terms. This means that the language used in writing objectives should contain nouns that can be measured and verbs that can be demonstrated.

Descriptions of the essential elements and distinguishing properties of quality education are hard to come by and will differ with cases in point. It is possible, however, to establish indicators of quality that will be useful in drawing up guidelines and writing measurable objectives. Research conducted by William S. Vincent of Teachers College, Columbia University, has identified four categories of educational procedures that exemplify quality education. Chisholm (2) reporting this work lists the procedures as follows:

(1) *Individualization:* Procedures that reflect an attempt to deal with individual differences among pupils.
(2) *Inter-personal Regard:* Behavior that reflects warmth and respect among pupils and between pupils and teachers.
(3) *Creative Expression and Divergency of Thinking:* Opportunity for the expression of intelligence in many different ways, for the realization of varieties of talent and the encouragement of intellectual pioneering.
(4) *Group Activity:* Group interaction and interpersonal facilitation as instruments to aid learning and the accomplishment of social goals.

It cannot be expected that the procedures which exemplify quality education will in some manner "just happen." While it is true that the above listed procedures may be more easily implemented in the open space school, planning and design stimulated by motivation and dedication on the part of the professional staff will be necessary to bring them about.

Conclusion

The architectural dreamer can only capture his ideas and through the use of brick and mortar guide their transformation into an aesthetically satisfying and functionally operative structure. Once the notions of scholars in the fields of education, psychology, sociology, and architecture appear in the completed building, the task of making the structure fully-functioning falls to the professional educator.

In the case of the open space school this task represents a challenging, pioneering effort. Those accepting this challenge must possess characteristics of uncommon metal. It is within this context that the paradox of the open space school is made abundantly clear: The shape of the institution does not shape the nature of the learning activities that may occur within: it does, however, shape with a vengeance those who would attempt to implement methods, strategies, and organization common to the traditional school.

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OPEN SPACE SCHOOLS: TOOLS FOR TEACHERS ENVIRONMENTS FOR LEARNING

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During the last decade, some school systems have provided teachers with a different kind of teaching aid—open areas large enough to accommodate several traditional classroom groups of 25 to 30 pupils. This access to space on a much larger scale than usual demands that teachers re-think the ways in which they can use the school's physical environment to enhance their teaching and to improve learning opportunities for their pupils.

What are some of the possibilities? Teachers who have worked with open space schools report that they have been able to group and re group pupils in a variety of ways more easily than they could in schools where there are self-contained classrooms. They have been able to make better use of their own special competencies by planning co-operatively with other teachers using the same open area. They have found that the open space at their disposal has assisted them in the development and introduction of innovative practices such as nongrading and team teaching. They have been able to provide opportunities for pupils to have much freer access to a wide variety of instructional materials ranging all the way from a wealth of library resources to audio-visual media and laboratory equipment.[1]

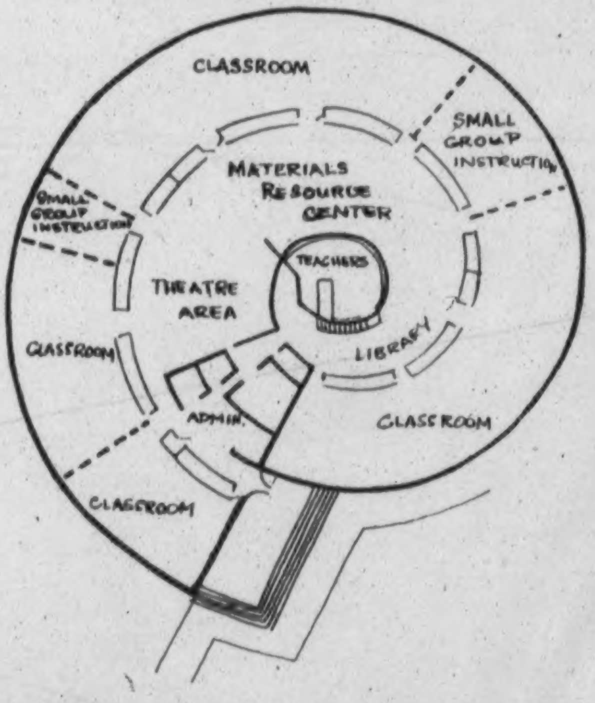
The common thread running through each of these statements is the emphasis on the way open space has helped teachers achieve some of their goals. It is one of a number of important tools in the professional teacher's hands. Moreover, the efficiency of this tool, as with many others, is influenced by the other tools used in conjunction with it and by the skill of the user. Clearly, it is important to identify those resources and skills which are essential if open space is to be a device which makes a positive contribution to the teaching learning situation in schools.

First, let us examine some of the essential physical features which should accompany the building of large open areas without interior walls, and then consider some of the professional and curricular issues which must be taken into account.

Physical Features

If it is desirable for pupils to move about easily from group to group, or from one type of learning activity to another, two types of physical provisions are necessary: (1) a readily accessible, well-equipped instructional materials centre with places for pupils to read, to listen, or to view films or videotape without disturbing others; and (2) a way of facilitating such pupil movement from one group to another. These requirements have certain important implications for overall school design.[2] For example, the instructional materials centre should be located on the same floor level so that pupils can move in and out of that area quickly and naturally and so that teachers can maintain minimum visual communication with them. As well, there should be special provisions for acoustics, usually involving carpeting, ceiling treatment, and the use of sound-deadening wall panels strategically located. Carrells for individual listening, viewing, and studying are also needed. To facilitate pupil movement from group to group, table desks equipped with removable tote trays are helpful. Using these trays, pupils can carry their belongings with them rather easily by sliding the trays out from under their tables and then sliding them into others located in the area in which they are to work next.

Two other types of space requirements have been found to be necessary adjuncts to the successful use of open space—the availability of small group discussion rooms, and some self-contained classroom space for pupils who need that type of environment. Without the presence of these design and equipment components, open space as a teaching tool is difficult to employ successfully.[3]



Now, given the physical tools, as it were, what are the professional and curricular concerns which accompany the use of open space?

Professional and Curricular Concerns

By its very nature, an open area school is a tool available to several teachers at once. Therefore, open space affects its teacher users professionally by requiring them to share space and facilities within that space. The amount of sharing depends on the curriculum which they select. *It is the curriculum which is the crux of the matter of space usage.* If the goal is to provide for the development of each pupil at his own level and at his own rate, then open space can be one component in the provision of individualized pupil programs. If the professional teacher has identified his own competencies and wishes to make optimal use of them to his pupils' benefit, there again, open space can be a facilitating device. But the presence of large open areas in schools does not guarantee that curricular change will come about. Curricular improvement remains very much the professional's task. Thus it is difficult to divorce the concept of open space from a consideration of the aims of the curriculum.

Providing for individual pupil progress is one of the major curriculum aims which can be facilitated by the skillful professional use of open space. A large open area in which teachers working together free students to learn at their own rates, and to pursue their interests independently, demands that teachers become coordinators of time, space and personnel, including themselves.[1] What kind of professional knowledge and what kinds of skills do such teacher-coordinators need?

Since two or more teachers often share curriculum planning for all students using the open space facility available to them, teachers take on new roles as diagnosticians and strategists. Diagnosis of pupil needs and of their own teaching competencies in the light of the curriculum objectives will shape the strategy to be adopted. The strategy could involve a form of team or cooperative teaching, and may lead, for example, to the use of differentiated staffing in a school in order to use the open space facility most advantageously. Whatever form the organization of pupils and teachers takes, it is evident that teachers will need to use information about pupil achievement and interests, about the kinds of instructional resources available, and about their colleagues' plans and programs if they are to create a teaching learning environment which benefits each pupil optimally.

The conditions for teaching implicit in the provision of large open spaces in schools changes the teacher's role considerably. Instead of time spent planning and making decisions by oneself, the teacher spends time with others making group decisions. Research about achievement in groups has supplied some information about the ways successful groups accomplish their tasks while providing satisfaction to each of the group members at the same time. Effective groups can be established by teachers who are knowledgeable about group processes and who have some practice in helping a group function well.[5]

The role of coordinator of pupils, experiences, materials, assistants, and time is not a new one to the professional teacher. The major change which is introduced when an open space facility becomes available as a teaching tool is the colleagial dimension. Teachers as individuals have long been responsible for decisions directly related to the curriculum and instruction of pupils assigned to them. Sharing this responsibility with fellow-professionals for larger numbers of pupils creates a significant change in teaching role.

Open space as a teaching tool should multiply the ways in which a teacher or teachers can deploy time spent with various groups of pupils, or indeed, with individual pupils. In addition to the usual scheduling arrangements to avoid the clash of certain incompatible activities or to ensure the availability of certain pieces of equipment, ways of matching up pupils with teachers according to their distinctive thinking processes might also be incorporated.

Some evidence is now available that an individual's characteristic way of thinking can be identified and that, by matching certain teachers with certain pupils, learning will be enhanced.[6] When teachers are able to make use of this kind of knowledge in order to make grouping decisions about pupils, or to provide for individual instruction, an open space facility could be of great assistance.

Summary

To summarize, open space refers to those areas within school buildings which lack interior partitions and, hence, have eliminated or reduced the amount of visual and acoustical separation between teaching stations and classroom areas. In order to make maximum use of open space in implementing the curriculum, teachers require additional kinds of spaces as well, particularly small group discussion rooms and some enclosed classroom areas to be used by pupils and teachers as needs arise.

An open space facility provides the teacher with a device for attaining certain types of curriculum aims and can be used to provide pupils with an environment for learning which differs from the traditional classroom. The quality of that environment is primarily affected by the ways in which teachers choose to incorporate that particular kind of space into plans for achieving the goals of the curriculum.

Just as any tool is of maximum value when it is in the hands of a skilled worker, so an open space facility in a school benefits pupils most when it is employed strategically by skilled teachers. Any tool can be detrimental if misused. The appropriate use of open area facilities by professionals is one means of achieving curricular goals related to inquiry learning, individualization of instruction, and nongrading in the elementary school.

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LECTURE PRESENTATION

The lecture presentation will necessarily provide only a brief exposure to many facets of an open-space environment. During the presentation (and in the additional readings) you may find the following questions useful to focus attention on major issues:

1. In what ways can space be perceived?
2. What are the major influences of the physical environment on the individual?
3. In what ways have school architects utilized space in new building designs?
4. What facilities and resources are desirable in these new learning environments?
5. What emphases should be given to physical features, instructional technology, and pupil and teacher interaction in this environment?
6. What are some of the difficulties associated with open-space learning environments?
7. What research findings support or contradict the impressions about open-space schools?
8. What instructional strategies and general curriculum considerations may be desirable in open-space schools?

You may wish to make brief notes on these issues on the coloured-sheets provided.

School:
Grade:
Teacher:

Name:
Group:
Date:

OUTLINE FOR LECTURE NOTES

1. Types of space

2. Influences on individuals

3. Architectural features

4. Facilities and resources

5. Interaction

6. Difficulties

7. Research

CONTENT EVALUATION

Following the lecture presentation you will be asked to complete a short answer questionnaire on the material in the presentation and in the preliminary reading.

If you feel at the conclusion of this evaluation that you are not confident in your understanding of the spatial environment, you may wish to revise the preliminary material and/or undertake some additional readings, looking for the features suggested previously.

ADDITIONAL READINGS

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Smith, Louis M. & Keith, Pat M., Anatomy of Educational Innovation: An Organizational Analysis of an Elementary School. New York: John Wiley & Sons, Inc., 1970, Chap. 6.

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The Open Space School: How Does It Work? The Education Digest, February 1972:15-18.

TEACHER CONFERENCE

This may be your first period working with this co-operating teacher in this particular environment. During this initial contact concentrate simply on getting to know the teacher and allowing him/her to find out some of your characteristics.

Some of the areas which you might like to mention about yourself are:

1. previous contact with children
2. any previous experiences as a teacher or observer in a school
3. your academic major
4. any particular interests you have which may help in your teaching experiences.

You should also establish, at this initial conference, and make a note of, such things as:

1. Teaching station and physical layout of the spatial setting. A child seating plan, if possible. You may wish to check your activity awareness sheet now, but still keep your original for the researcher.
2. The co-operating teacher's responsibilities in regard to:
    a. age-range and grade of pupils
    b. subjects taught
    c. co-operative planning or teaching
    d. specific duties and routines

Then you should discuss your learning experiences and classroom activities for the next three or four days in the light of the remainder of this booklet.

DIRECTED OBSERVATION

(preferably Day 1 and 2)

Purposes: (1) To help you to recognize essential features of your physical, social and academic environment in a spatial setting

(2) To train you to 'see' these things and to consider alternative ways of using them in a teaching-learning experience.

Activity 1: At the beginning of the day (or following a break) make notes on the physical facilities in your teaching area: type and arrangements of tables and chairs, cupboards, pinboards, floor covering, type of ceiling, position of teachers table and chair, lighting (including windows), movable partitions and their use.

Take no more than 20 minutes on this activity but try to also make a rough sketch plan. You may prefer to modify the "awareness" plan.

On successive days refer back to this plan and note on each occasion any major alterations and the reasons for them.

Use the Physical Observation sheets. Use one sheet for the sketch plan and the other for notes under your own headings.

Activity 2: Select a lesson, in consultation with the co-operating teacher, in which the teacher will use some form of grouping. This need not be a specifically "activity based" period, but could even be any "free time" when the majority of the class are interacting with each other.

At the beginning of the period try to observe in what manner

(1) children move into a group formation

(2) how many children there are in each group

(3) which children form any particular group and the seating (or other) positions (arrangement) they adopt.

(4) whether the composition of the groups changes very much and if so, what may have brought about the change

(5) the teacher's movement pattern during your observation period.

Make your observations on the following Social Environment Observation sheet.

Activity 3: Use the Lesson Observation format sheet as indicated.

For a minimum of two lessons (and preferably more at other stages during your sojourn in this environment), note the types of materials used by teacher and pupils, where these materials were obtained and who moved to get them and what directions were necessary from the teacher not only at the beginning of each lesson but at any time during each lesson observed.

School:
Grade:
Teacher:

Name:
Group:
Date:

PHYSICAL OBSERVATION SHEET

Floor plan

School:
Grade:
Teacher:

Name:
Group:
Date:

PHYSICAL OBSERVATION SHEET

Personal Notes

School:
Grade:
Teacher:

Name:
Group:
Date:

SOCIAL ENVIRONMENT OBSERVATIONS

1. Movement to groups

2. Group composition

3. Group arrangement

4. Any changes

5. Teacher movement

6. Other

School:
Grade:
Teacher:

Name:
Group:
Date:

LESSON OBSERVATIONS

Subject	Materials	Position		Directives
		Place	Person	

TEACHER DISCUSSION

After you have recorded your observations you should discuss them. The teacher/observer may have seen things you did not, and your observations may contribute a different perspective of the class environment.

In particular, you now need to clarify your own views on the following:

1. In what ways the furniture and facilities assist or hinder the children and the teacher?
2. What roles does the teacher have in this spatial environment?
3. What preparations are desirable to ensure that children experience a variety of personal contacts? Are these contacts difficult to maintain in this setting?
4. What distractions occur in a spatial setting?
5. Does the teacher tend to use instructional strategies other than the lecture method? If so, why? What complimentary facilities are required in these circumstances?

Following discussion of points like this with your cooperating teacher, very briefly summarize your own thinking as a series of headings and sub-points on the following page.

School:
Grade:
Teacher:

Name:
Group:
Date:

SUMMARY OF IMPRESSIONS OF OPEN-SPACE FACILITIES

READINGS

This set of readings is intended to provide some insights into face-to-face encounters within small groups, and to show some of the ways in which these encounters may be adapted to the spatial environment. Two articles are provided to introduce you to these ideas:

Sommer, Robert. Small Group Ecology. Psychological Bulletin, 1967, 67(2):145-152.

Traditional Classroom--Never! Monday Morning, November 1971, 6(3):11-17.

You may wish to read further on this topic or to consider some of the literature on open education in relation to it. The following references are available for easy consultation. More detailed reading lists can be provided.

Sommer, R. Personal Space: The Behavioral Basis of Design. Englewood Cliffs, New Jersey: Prentice-Hall Inc., 1969, Chaps. 1 and 4.

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SMALL GROUP ECOLOGY

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The systematic study of the arrangement of individuals in small groups began in 1950 using post hoc analysis of data collected for other purposes. Only recently have investigators begun to design experiments with group ecology as the major independent variable. Results have shown that spatial arrangement is a function of group task, the degree of relationship of individuals, personalities of the individuals, and the amount and kind of available space. The resulting arrangement in turn affects communication, friendship, and status differentiation between individuals. Knowledge of small group ecology can help in developing a theory of social relationships that includes the environment in which interaction takes place as well as principles for designing functional environments from the standpoint of human relationships.

Systematic study of spatial arrangements in face-to-face groups, or small group ecology as the field has been termed, is a comparatively recent development. Typically, the arrangement of people has been an incidental or background variable in psychological experimentation. The use of spatial arrangements as an independent variable in small group research can be traced to Steinzor (1950), who noted some unusual spatial effects while he was doing a study on other aspects of interaction. This pattern persists to the present, since at least half the published studies of small group arrangements involve the reanalysis of data collected for other purposes. Despite consistent and clear data, psychologists seem reluctant to make the arrangement of people a major independent variable. As Hall (1959) put it, "We treat space somewhat as we treat sex, it is there but we don't talk about it." Yet, enough studies, experimental as well as ex post facto, have accumulated to warrant some attempt to integrate the findings and indicate what directions further studies may profitably take.

This review focuses upon the arrangement of individuals in face-to-face groups. Studies of residential living units such as dormitories, housing developments, and communities are omitted. These phenomena require a different level of analysis (community or societal) than the relationship between individuals in face-to-face groups. The study of larger stable human aggregations has fallen to the fields of demography, human ecology, and geography. Because of space limitations, studies of crowding and density are excluded from consideration since these important topics deserve treatment in their own right. This study concentrates instead on two aspects of small group ecology—the way groups arrange themselves under various conditions, and the ways in which the resulting arrangements affect communication, productivity, and social relationships.

LEADERSHIP AND SPATIAL ARRANGEMENTS

Many of the concepts used in discussion of leadership, such as central figure, dominant position, upper echelon, and high status are based on spatial analogies. Studies of group dynamics and leadership have shown that concepts such as social distance, inner circle, and isolate have some geographic reference but there is no simple isomorphism between psychological and geographic concepts. While investigating discussion groups, Steinzor noticed a participant changing his seat in order to sit opposite another person with whom he had recently had a verbal altercation. In an ex post facto design using data already collected, Steinzor found that when one person stopped speaking, someone opposite rather than alongside was next to speak, an effect he attributed to the greater physical and expressive value a person has for those opposite him in a circle. Following this, Bass and Klubeck (1952) reanalyzed their discussion group data to determine if leadership ratings varied as a function of location in an inverted

V or a parallel row arrangement. Although they found that persons occupying end positions attained higher status than people in middle seats, there were so many confounding factors, including a nonrandom selection of seats by people of different status levels, that their results were equivocal. Hearn (1957) reanalyzed small group data collected for other purposes and found that leadership style had a significant influence on what was termed the "Steinzor effect." With minimal leadership, members of a discussion group would direct more comments to people sitting opposite than people adjacent; when a strong leader was present, people directed more comments to adjacent seats than to people opposite; and when direction of the group was shared equally among the members, no spatial effect appeared. These results may be explained in terms of eye contact. Since it is impermissible to look directly at a dominant individual at close quarters, the individual restricts his gaze to his immediate neighbors when a strong leader is close by. Steinzor's expressive contact hypothesis has been further refined by Argyle and Dean (1965), who studied the connection between eye contact, distance, and affiliation. A one-way mirror was used to chart interaction between a naïve subject and a confederate who gazed continually at the subject. There was less eye contact and glances were shorter when the people were close together, and this effect was most pronounced for mixed-sex pairs. The authors believed that eye contact is a component of intimacy, which is governed by both approach and avoidance forces kept in a state of equilibrium during any given encounter. When this equilibrium is disturbed by increasing physical proximity or decreasing eye contact, there are compensatory changes along the other dimensions.

Communication flow as a function of spatial relationship was emphasized by Leavitt (1951), who continued the work of Bavelas (1950). Leavitt used groups of five subjects each who were seated at a table but separated from one another by vertical partitions. Channels of communication could be changed by manipulating slots in the partitions. Group leadership was closely correlated with a member's position in the communication net. Centrally located individuals enjoyed the task most and those in the peripheral positions enjoyed it least. Howells and Becker (1962) hypothesized that people who received greater numbers of messages would be more likely to be designated leaders than people who received fewer messages. They arranged groups of five subjects around small rectangular tables with three people on one side, two on the other. The results confirmed their predictions that more leaders than would be expected by chance would emerge from the two-man side of the table.

The studies described thus far have involved *relational* space, or the way people orient themselves towards one another. A second line of research has emphasized the cultural import of various fixed locations. In studies of leadership, the head chair at the table has a special significance. Sommer (1959) found that leaders in small discussion groups gravitated to the head position at rectangular tables. Strodtbeck and Hook (1961) reanalyzed data from experimental jury deliberations and found that people at end positions participated more and were rated as having greater influence on the decision process than people at the sides. It was also found that jurors from the managerial and professional classes selected the head chair more than did individuals of lower status. Hare and Bales (1963) did not work with leadership per se, but rather with dominance as measured by a paper-and-pencil personality test. Reanalyzing the data collected by Bales and his associates from five-man discussion groups, they found that subjects high on dominance tended to choose the central seats and do the most talking. Felipe (1966) used the semantic differential to assess dyadic seating arrangements along these dimensions: intimate-unacquainted, hostile-friendly, talkative-untalkative, and unequal-equal. The cultural influence of the head position was evident on the equality dimension—if one member of a pair was at the head of the table, this pair was rated significantly less equal than if members were both at ends of the table or only at the sides.

A weakness of all these studies is the limited range of cultures and populations sampled, almost all taking place in the United States. This would not be a serious limitation except that Hall indicated that leaders in other parts of the world use space differently. An equally serious problem concerns the confounding of location, status, and personality. All studies agreed that choice of seats is nonrandom with respect to status and personality. High status, dominant individuals in American culture gravitate to the head position, and people who occupy the head position participate more than people at the side positions (Strodtbeck & Hook, 1961), but there is no way to disentangle status from location in these studies. It is possible that occupancy of certain locations automatically raises an individual's status and/or dominance. On the other hand, it may be that dominant individuals choose these locations for reasons of tradition and would participate more wherever they sat, and thus their location has no essential connection with their participation. It may be that high status people tend to participate more *and* certain locations also increase participation, but the combination of the two results in greater participation than either by itself. The only way to disentangle these variables is to conduct experiments in which people are assigned randomly to various locations and their relative contributions noted. It must be recognized that these conditions are highly artificial in a society that typically allocates space according to status considerations. From the standpoint of designing experiments in natural settings, the policies of random assignments of location are not always adhered to in practice. In the prison camp studied by Grusky (1959), inmate leaders received the most desirable job assignments as well as the bottom bunks (which were status symbols in the dormitories) despite the official policy of random bed assignment. It is likely that the same pressures responsible for the connection between status and location operate against any assignment scheme in conflict with accepted spatial norms.

TASK AND LOCATION

The quest for effective spatial arrangements in working units such as relay assembly teams, seminars, and buzz groups has been a subject of considerable concern to applied psychologists. Textbooks of group dynamics recommend horseshoe or semicircular rather than straight-row arrangements for discussion groups and classrooms, rectangular tables have been criticized for fostering authoritarian leadership, and the improper location of individuals has been blamed for the failure of the working teams. Intuitively it would seem that the proper arrangement of people would increase production, smooth the flow of communication, and reduce the "friction of space," but the data are largely of the anecdotal variety. Perhaps more convincing data lie buried somewhere in applied psychology or human engineering journals and, if so, a valuable service could be rendered by bringing them to light.

Several recent studies have explored the connection between spatial arrangement and group task. Sommer (1965) and Norum (1966) studied the arrangement of conversing, competing, coacting, and cooperating individuals. At a rectangular table, cooperating pairs sat side-by-side, conversing pairs sat corner-to-corner, and competing pairs sat across from one another, while coacting individuals sat in distant arrangements. In a separate study of cooperative and competitive working conditions using a like-sex decoy, the subjects sat opposite the decoy in the competitive condition and on the same side of the table in the cooperative condition.

The extent to which similar attitudes produce greater physical proximity remains in some dispute. Little, Ulehla, and Henderson (1965), using silhouette figures, found that pairs reputed to be Goldwater supporters were placed closer together than Goldwater-Johnson pairs, but the effect did not occur with Johnson-Johnson pairs. However, Elkin (1964), using actual discussion groups involving pro-pro, pro-anti, and anti-anti Medicare pairs of college students, found no differences in seating between concordant and discordant pairs. It is possible that the intensity of the discussion and the interest shown by each of the participants influences proximity more than attitude concordance or discordance.

Several psychiatrists and clinical psychologists have written speculative articles on the significance of various spatial arrangements in psychotherapy. Goodman (1959) made an intriguing comparison between the Freudian use of the couch, Sullivan's cross-the-table therapy, and the spatial freedom of the Gestalt therapists. Wilmer (1958), Winick and Holt (1961), and Horowitz (1965) all discussed seating position from the standpoint of nonverbal communication in group psychotherapy.

INDIVIDUAL DISTANCE

The term individual distance was first used by Burkhardt (1944) to refer to the spacing that animals maintain between themselves and others of the same species. Several studies have been directed toward the question of how close people come to one another and to physical objects. Hall (1959) developed a detailed schema for conversational distance under various conditions of social and psychological closeness which ranged from 3–6 inches for soft intimate whispers to 8–20 feet for talking across the room in a loud voice. It is also likely that noise, bustle, or threat brings people together. To measure conversational distance, Sommer (1961) sent pairs into a large lounge where they could sit either side-by-side or across from one another to discuss designated topics. On the basis of previous work, it was assumed that people would sit across from one another rather than side-by-side unless the distance across was too great. It was found that the upper limit for comfortable conversation *under these specified conditions* was approximately 5.5 feet between individuals. A subsequent study used four chairs instead of couches so that the distance side-by-side as well as the distance across could be varied. Again the 5.5-foot conversational distance prevailed. However, a cursory examination of conversational distance in private homes revealed a much greater conversational range than this, something like 8–10 feet between chairs.

Other investigators have used paper-and-pencil or projective tests to study individual distance. Kuethe (1962, 1964) instructed students to pin yellow felt figures (a woman, man, child, dog, rectangles of various sizes) on a blue felt background in various combinations. Kuethe found that the woman and the child were placed closer together than the man and the child, while the dog was typically placed closer to the man than the woman. In all conditions, the people were placed closer together than the rectangles. Little (1965) used line drawings of males and females to examine concepts of individual distance. It was found that the degree of prior acquaintance attributed to cardboard figures influenced the distance they were placed apart. A replication using silhouettes and another using live actresses who were posed by the subject in scenes involving different activities also showed that the distance apart which the figures were placed was a function of the closeness of the relationship between them.

Horowitz, Duff, and Stratton (1964) investigated individual distance among schizophrenic and nonschizophrenic mental patients. Each subject was instructed to walk over to either another person or a hatrack, and the distance between his goal and his stopping place was measured. It was found that both groups approached the hatrack closer than they approached a person. Each subject tended to have a characteristic individual distance which was shorter for inanimate objects than for people. McBride, King, and James (1965) did a similar study testing GSR to varying amounts of closeness between subject and male or female experimenters. It was considered that GSR effects would provide an indication of the level of arousal associated with the proximity of neighbors. The authors found that GSR was greatest (skin resistance was least) when the subject was approached frontally, while a side approach yielded a greater response than a rear approach. The response to experimenters of the same sex was less than to experimenters of the opposite sex. Being touched by an object produced less of a GSR than being touched by a person. Argyle and Dean (1965) invited the subjects to participate in a perceptual experiment in which they were to "stand as close as comfortable to see well" to a book, a plaster head, and a cutout life-sized photograph of the senior author with his eyes closed and another with his eyes open. Among other results, the subjects placed themselves closer to the eyes-closed photograph than the eyes-open photograph.

Systematic violation of individual distance was undertaken by Garfinkel (1964) and Felipe and Sommer (1966). Garfinkel reported that the violation of individual distance produced avoidance, bewilderment, and embarrassment, and that these effects were most pronounced among males. Felipe and Sommer systematically staged invasion sequences under natural conditions (people seated on benches and at library tables) and demonstrated observable flight reactions. Two recent studies have dealt with the relationship between individual distance and personality variables. Williams (1963) showed that introverts placed themselves further from other people than did extroverts. The same conclusion was reached by Leipold (1963), who noted the chair a person occupied vis-à-vis a seated decoy under anxiety and praise conditions. There was greater closeness under the praise than the anxiety conditions, and extroverts placed themselves closer to the decoy than introverts.

Sex differences in spacing have been found on a number of occasions, but the number of cultures sampled is limited. Several investigators (Elkin, 1964; Norum, 1966; Sommer, 1959) have found that females make more use of the side-by-side arrangement than do males. Side-by-side seating, which is generally considered to be the most intimate of all seating arrangements for people already acquainted, is comparatively rare among males if they are given the opportunity to sit across from one another. The idea that females can tolerate closer physical presence than males is underscored by observations of women holding hands or kissing one another, practices which are uncommon between males in this culture.

Campbell, Kruskal, and Wallace (1966) used seating arrangements of Negroes and whites as an index of attitude in three Chicago colleges. Clustering of Negroes and whites was found to be associated with differences in ethnic attitudes in the three schools. These authors and Strodtbeck and Hook (1951) attempted to develop appropriate statistical techniques for analyzing aggregation data. Tabulating the results of a single observation involving a large number of individuals whose behavior at times relates to one another and at times to aspects of the physical environment is no small achievement, but when one assembles the records of repeated observations of individuals, some observed many times and some just one, the difficulties multiply. It is fortunate that animal ecologists and zoologists have encountered these problems over the years and have developed useful methods for measuring aggregation, dispersion, home range, and social distance. McBride (1964) has developed computer programs to assess the degree of nonrandomness within an aggregation. Esser (1965), working on a closed research ward of a mental hospital with the available area divided into squares so that the location of each patient can be charted during the entire working day, has obtained detailed records of individual spatial behavior similar to those of the better tracking studies by animal biologists, but he has not yet reached the same level of precision in relating the individual patients' locations one to another. The problems in analyzing the interdependency between a large number of individuals with $n(n-1)$ dyadic relationships has led some investigators to use physical aspects of the environment such as walls, partitions, and chairs as coordinates for locating individuals. A new approach (Bechtel & Srivastava, 1966) is the development of the Hodometer, an electronic recording device placed on the floor of a building to measure use of given areas as well as pathways. A much cruder index of area usage was suggested by Webb, Campbell, Schwartz, and Sechrest (1966), who examined the wear on floortiles in front of different museum exhibits.

Discussion

Knowledge of how groups arrange themselves can assist in fostering or discouraging group relationships. A library which is intended to be *sociofugal space* (Osmond, 1957), aimed at discouraging interaction, requires knowledge of how to arrange people to minimize unwanted contact. It may be possible to use the rank order of preferred arrangements by interacting groups as arrangements *to be avoided* in sociofugal space. On this basis, corner-to-corner seating would be less satisfactory than opposite or distant seating in a sociofugal setting. An Emily Post or Amy Vanderbilt may know these principles intuitively, and diplomatic protocol may codify them, but there is value in making them explicit and subjecting them to empirical test. To an increasingly greater extent we find ourselves being arranged by impersonal environments in lecture halls, airports, waiting rooms, and lobbies. Many aspects of the proximate environment, including furniture and room dividers, have been placed for ease of maintenance and efficient cleaning with little cognizance to their social functions. These principles will be of most help in institutional settings such as schools, hospitals, public buildings, and old folks' homes where the occupants have little control over their surroundings. The straight-row arrangement of most classrooms has been taken for granted for too long. The typical long narrow shape of a classroom resulted from a desire to get light across the room. The front of each room was determined by window location, since pupils had to be seated so that window light came over the left shoulder. However, new developments in lighting, acoustics, ventilation, and fireproofing have rendered invalid many of the arguments for the boxlike room with straight rows. In mental hospitals, the isolation of schizophrenic individuals can be furthered by sociofugal settings which minimize social contact, or reduced through sociopetal buildings aimed at reinforcing social behavior. The former approach is valid if one wants to provide an optimal environment in terms of the individual's present needs, the latter if society desires to shape the patient's social behavior to facilitate his return to society. It is mindless to design mental hospitals without taking cognizance of the connection between physical environment and social behavior. The study of small group ecology is important not only from the standpoint of developing an adequate theory of relationships that takes into account the context of social relationships, but also from the practical standpoint of designing and maintaining functional contexts in which human relationships can develop.

Several problems of method must be resolved before a relevant theory of group ecology can be developed. Having reviewed the studies themselves, problems in recording and some special characteristics of the settings in which the studies have taken place should be mentioned. The studies described have generally tabulated gross categories of behavior without any real specificity or precision. A person's location has been plotted as if this described his orientation, head angle, arm position, etc. Stated another way, the investigators whose work has been described here have relied almost exclusively on the eyeball technique of recording. Some, such as Esser and McBride, are moving into the electronic processing of observational data, but the improved precision is in data analysis rather than the integration of various facets of spatial behavior. Very little use has been made of photographic recordings. One would hardly undertake the study of comparative linguistics without a tape recorder, but only a handful of investigators whose work we have discussed have used still photographs, much less moving pictures. Twenty-five years ago, Efron (1941) hired a professional artist to sketch conversing groups. A few anthropologists, such as Birdwistell and Hall, are currently accumulating film libraries of interaction data. McBride found it necessary to photograph aggregations of fowl from small towers above the coops. It is difficult to get good photographs of the spatial arrangements of people from the horizontal plane, particularly if there are more than two individuals involved. Yet, it seems likely that the real breakthroughs in this field will occur when methods for monitoring angle of orientation, eye contact, and various other nonverbal cues are developed for use in standard interaction situations. The arguments for and against laboratory studies of group behavior which involve one-way mirrors, microphones, and hidden photographic equipment compared to field studies in playgrounds, schools, and city streets will not be reviewed here. However, a promising solution is the field-laboratory method used by Sherif (1954) in his camp studies where he employed a standard controlled situation, in the sense that relevant variables were specified in advance and introduced in specified ways by the experimenter but always under conditions that appeared natural and appropriate to the subjects. Another limiting element in the work to date is that almost all the studies have involved discussion groups around tables and chairs. We know little about the ecology of working groups (apart from sociometric data) or co-acting individuals, particularly if they are standing or moving. Again, the technical problems of recording interaction patterns of moving individuals are much greater than if the individuals are seated in a classroom or around a conference table.

Along with this is a disproportionate number of environmental studies that have taken place under conditions of confinement, particularly in mental hospitals. At this time there are at least seven studies underway on the use of space by mental patients. As far as the writer knows, this exceeds the number of current studies of spatial behavior of non-hospitalized individuals. Mental hospital studies allow greater control and environmental manipulation than can be achieved outside a total institution, but they also confound the effects of schizophrenia and institutionalization as a social process over time with the effects of captivity and locked doors as spatial variables.

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Traditional classroom –never!

This magazine played a role in spreading discussion of the open-area school and the related ideas of continuous progress and team-teaching. Many open-area schools have now been operating for several years in different parts of Canada. How is it all working out? There is as much debate as ever. Here a teaching team of Calgary teachers relate their experiences gained at the Huntington Hills Elementary School. They are Anna MacGregor, Fay Formanek, Wally Johnson, and Linda Lister. The photos were taken by the Calgary School Board's Instructional Aids Department. Discussion of this and other open-area experiences is invited from Monday Morning readers.

INNOVATION AND CHANGE has taken place in many Canadian schools. This trend has led to the construction of open-area schools in Calgary, Alberta. One of these, Huntington Hills Elementary School is quite unique in its design and structure.

Three large instructional areas radiate from the central library. Two half-size classrooms accommodate remedial instruction. Ancillary rooms and gymnasium are provided for art, science, music and physical education.

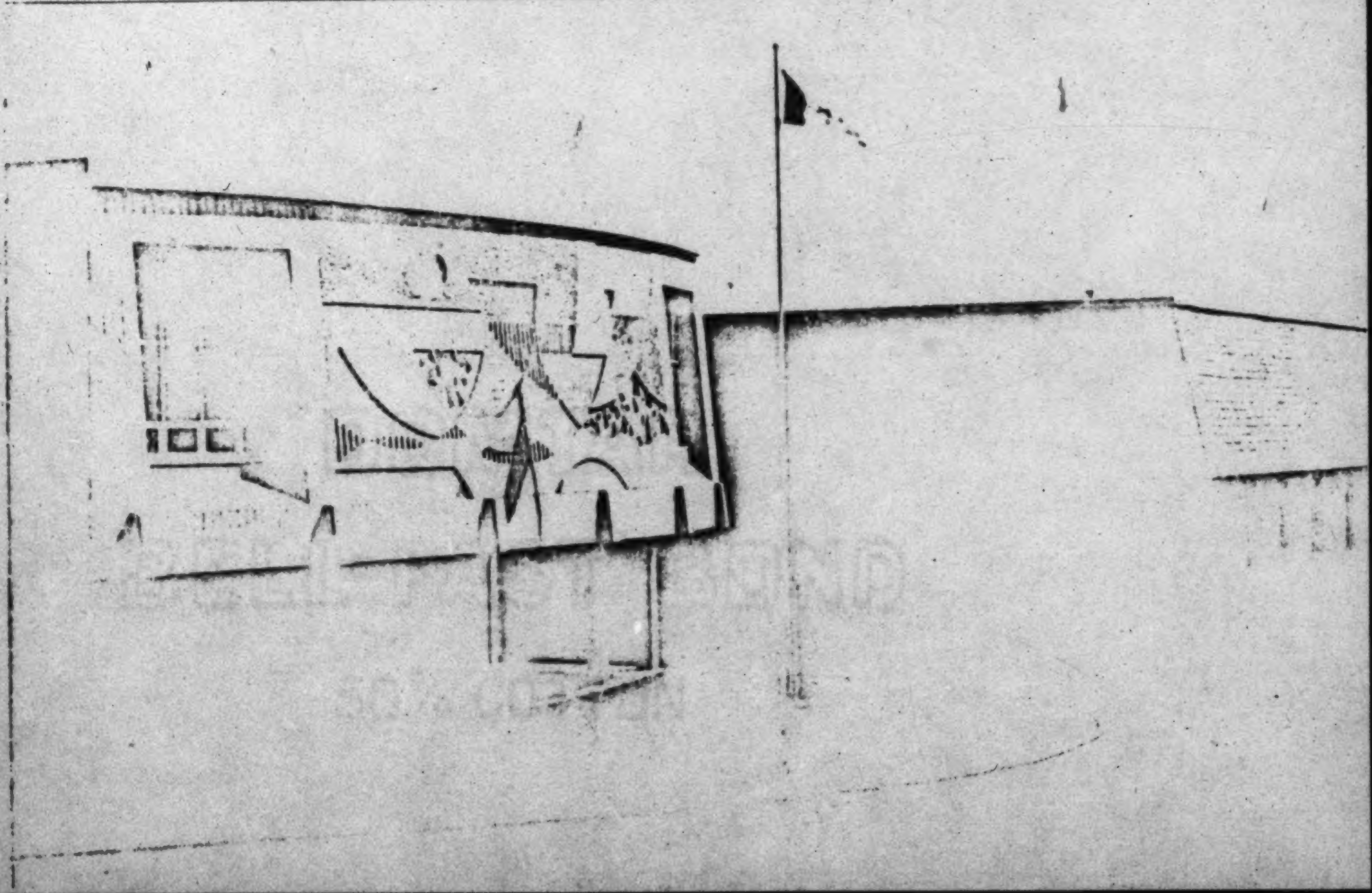
The structure and furnishings of Huntington Hills contribute to the flexibility and freedom on the part of students and teachers. The carpeting and high open-beam ceiling ensure good acoustics within the areas.

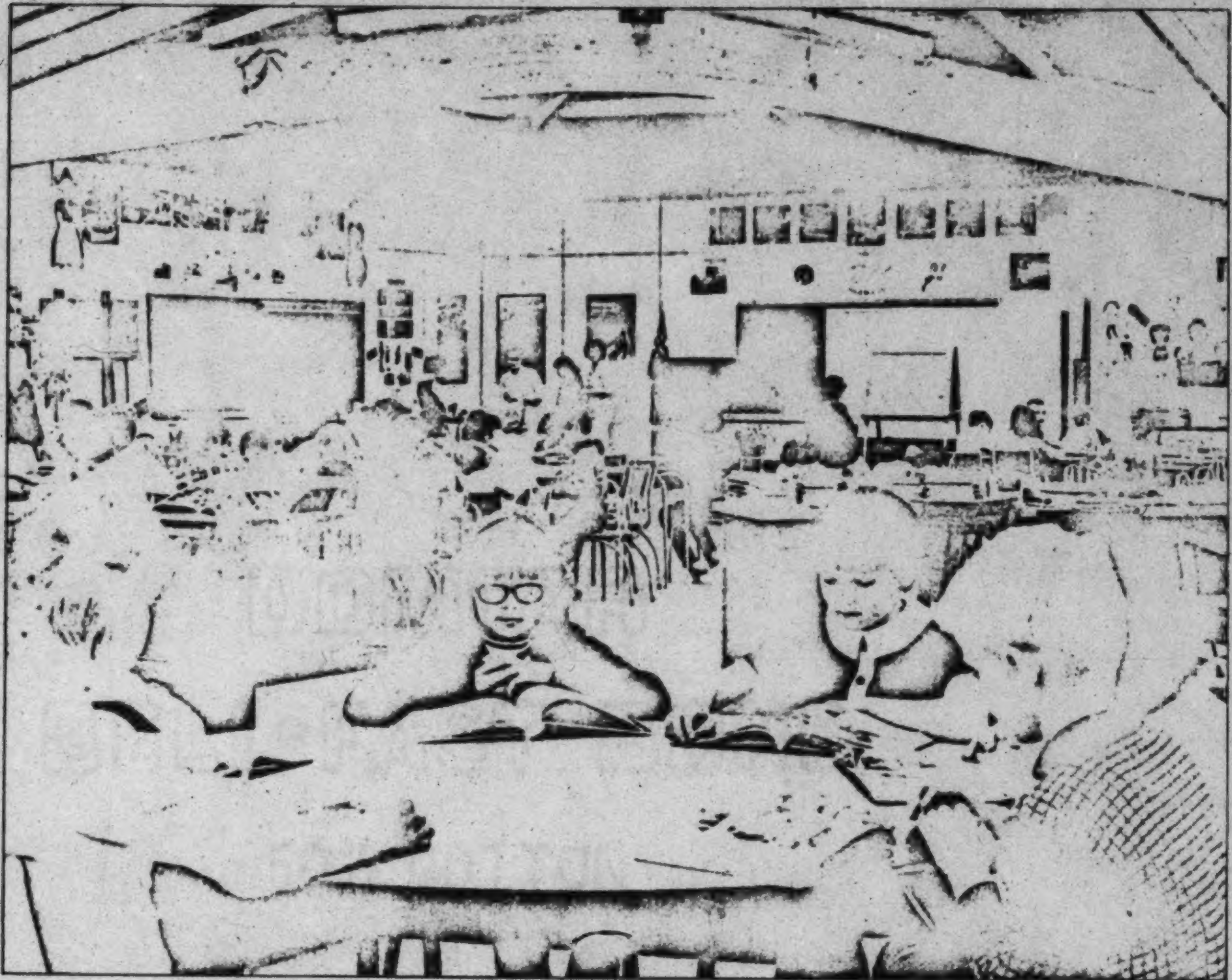
We, a team of teachers from the school's west area (3rd and 4th year students), would like to share our experiences with you. We all applied for a position in this school. We wanted to teach in open area.

Principal D. H. Louden helped us and backed us up. With his guidance, our initial organization was planned.

ORGANIZATION

Our organization utilizes team teaching and subject specialization. A closer look





The library projects into the West Area

at each subject will illustrate this more clearly.

SUBJECTS

Opening exercises

Opening exercises are conducted by one teacher with the whole area participating.

French

The French taught to fourth year students is timetabled to coincide with the Parlons Français television programme. The TV lessons and follow-up sessions are held in the area. A capable French specialist is a member of our team.

Writing and printing

Instruction in this subject is given to the third year students by overhead projector with a team of two teachers. Writing is carried on while the fourth year students are having French. The contrast of the quiet writing lesson and lively French songs illustrates how effectively the open area can work.

Communications

Skills! Oral reading! Play practices! Research! Individualized reading! These activities are all part of our communications programme. Early in September, Fourth Grade Readiness and Gates MacGinitie reading tests were administered to all third and fourth year students. We used the results to place the children in four groups ranging from remedial to enrichment. The type of programme is determined by the need of the pupils. The small remedial group receives instruction in the half-size classroom while the other groups remain in the area.

To re-emphasize reading skills an alternate type of instruction is provided. On these days skills are retaught. As children become adept at the skills they progress to an enriched programme.

Creative writing, choral speech, literature appreciation, puppetry, research and language skills are interspersed throughout.

Spelling is taught by a phonetic approach using basic vowel rules and an individualized kit.

Our communications programme is designed to provide the children with an opportunity to progress at their own rate to the best of their ability: continuous progress through the levels.

Arithmetic

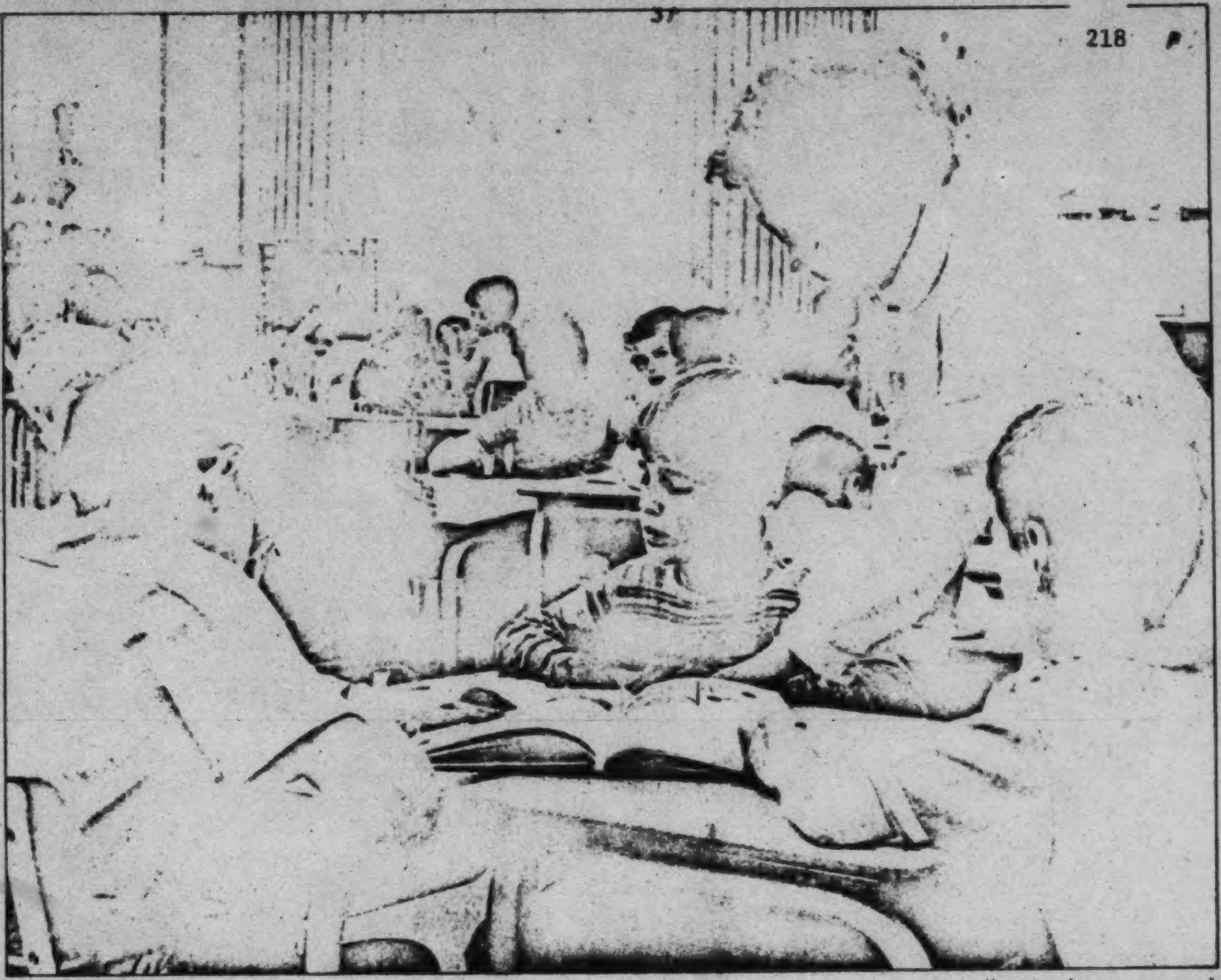
Instruction in arithmetic has been handled in two ways. Third year children receive initial instruction from a team of two teachers. Children encountering difficulty are given individual or small group instruction immediately.

A remedial group of fourth year students is in the half-size classroom where the emphasis is on basic facts and computation. The remaining students are instructed in the area.

Science

Various methods of large and small group instruction have been experimented with in science. In the initial stages, instruction is given to the total group. After the presentation by one teacher, the students work on individual worksheets or reports. In a later phase of the unit, the students work on group reports. The four teachers help any group that requires extra attention.

We experimented with a second method of dividing the unit into four



A small research group at work

phases, and the total instructional group into four. Each phase was planned to cover a different aspect of the unit. It was so devised that each group of students would cover each phase, but that any group could start at any point. To illustrate this procedure let's follow one group of students through this plan. Group A begins with research in library, after six sessions there, they move to the science room to do an experimental phase. From this, the children move to the lecture-demonstration section, then finally to the correlated health aspect. By the end of twelve weeks, all students have been active in all phases.

The above two methods work successfully and will undoubtedly be tried again.

Social studies

Our social studies units are planned similarly to the science. This involves large group instruction followed by individual assignments.

The study of countries is organized in a different manner. The area is divided into four groups with each teacher responsible for a specific country. At the conclusion of the unit, the children have their choice of a new country and the teacher repeats the unit with a new group. A basic booklet was compiled that was adaptable to any country. This enabled us to stay within the same boundaries for equal evaluation.

Art

All children within the area receive large group (120 children) instruction by the art specialist on our team. Desks are grouped in fours. Children help by covering the desks with plastic sheets and handing out supplies.

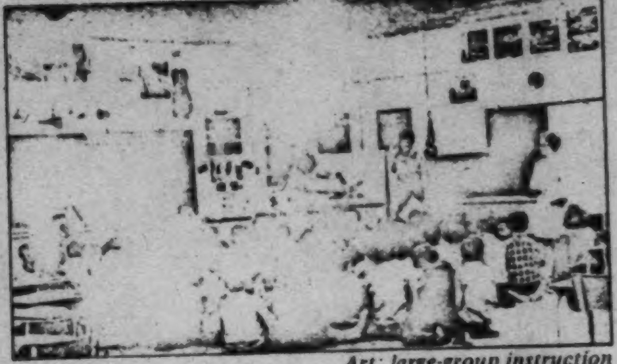
In order for all children to complete their project on the same day, it is sometimes necessary for the children to use different media. The open area or the large group has not in any way restricted the type of art projects carried out. All children have participated in clay modelling including glazing and firing, painting, crayon work, paper construction, printing, collage, papier mâché, and weaving.

Music and physical education

Teacher specialization facilitates the simultaneous timetabling of music and physical education. In physical education, the emphasis has been on movement education. School assemblies provide an opportunity for children to display their creative dance and music activities.

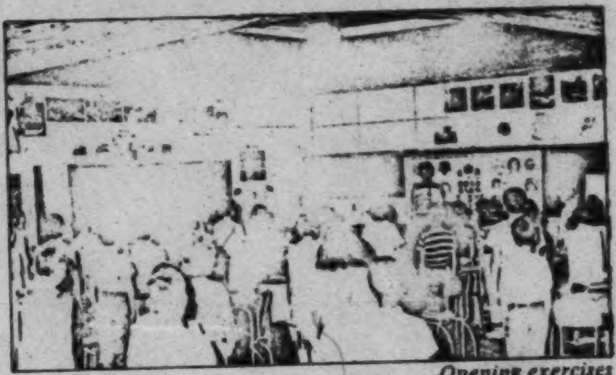
INTEGRATION OF OUR LIBRARY

The centrally located library forms a most integral and functional part of the whole system. Our librarian helps plan and carry out our many projects. In fact, with a more individualized approach, and an emphasis on research, the library has become more and more a part of the area. Teachers and students feel as though the library is part of their classroom. It is not a place, a separate entity, where one goes to sit quietly to read. It is rather a centre of activity



Art: large-group instruction

Large area and half-size classroom



Opening exercises

Writing lesson: large-group instruction

with free movement from area to library.

Books and encyclopaedias have become a part of the students' scope and atmosphere for every given school day. Only when one sees the movement, freedom and correlation between library and area can one appreciate the outstanding role of the library in our work.

ROUTINES AND DISCIPLINE

We think routines are necessary for any school to function properly and in an orderly manner. With the large group of children we found it even more essential that all routines be established early. Our team has always been in complete agreement as to how and what we expected of the children. As soon as one teacher finds a disturbing incident recurring, we immediately arrange alternative methods. All students within the area are the responsibility of all the teachers. We are continually working on and improving our routines. If a situation occurs, and it is the concern of the entire area, we bring the children together and discuss the matter with them. We have found that we have fewer discipline problems in our open area than in a self-contained classroom.

EVALUATION

Evaluation of such a large number of students caused us concern in the initial planning stages. How could we get to know the students? How could we talk intelligently to parents if we didn't know anything about the child? These questions, we decided, could be solved by establishing a card system. In this system, a card is set up for each child with a listing of the various subjects recorded in colour code. Each mark is entered in either red, blue or black to indicate in which third of the total the child was in, in that particular test. By using this colour system a quick glance compares the child subject-to-subject, test-to-test, and shows a general improvement or decline.

For the social adjustments and work habits of the students, comments are recorded on the back. The cards and comments have proven most beneficial for both reporting and parent-teacher interviews.

PLANS FOR THE FUTURE

In our progressive school system, we foresee a continuation and expansion of many of our present plans. We shall continue to experiment and innovate to meet the needs of the children. There will be a trend towards a more extensive individualized programme to facilitate continuous progress. Our library-centred open area school provides the proper foundation for this type of learning.

PARENTS' REACTIONS

The parents have been positive in their acceptance of the open area. We receive such comments as 'Very impressed'; 'Half-size classroom greater advantage to slower learners'; 'We like the centralized library'; 'Really well pleased with open area design and instruction'; 'Teachers and children are in a relaxed atmosphere'. We also get adverse comments, such as 'Back to a one-room classroom'; 'Slightly noisy at times'; 'Waste of tax money'; 'Desks are so close together children can copy'. Since these latter opinions are in the minority (8 per cent), we feel that the parents are overwhelmingly in favour of the open area concept.

HOW DO WE FEEL ABOUT IT ALL?

The open area school has been a real challenge to us. We have found that working together has required flexibility, cooperation and an earnest desire to succeed in this new effort. The essentials are a proper attitude, an open mind and an unselfish personality with due consideration for the team. All organization and planning has involved the entire group. We have derived pleasure and enjoyment from our team interactions and have benefited from each other's ideas and suggestions. Testing and evaluations have been continuous throughout the year, giving us assurance that the children have responded well and progressed well. They have learned to accept responsibility and to work independently.

As each year ends, and we complete our evaluations of the children's work, we find that our endeavours have indeed been successful.

Traditional classroom - never! ☐

SMALL GROUP EXPERIENCES

You are about to engage in a "teaching" activity. As part of the teacher preparation program you are allocated to one teacher or to a team of co-operating teachers. You and the co-operating teacher realise that these children are "her" children; they are "her" class. But in an open-space environment these children have much more frequent contact with many other adults. You are now assuming the role of an adult teacher. For the period in which you are teaching these children you need to remember that they are in your care and that you have the responsibility for them.

Before embarking on this small group activity you have observed not only the physical facilities available to you in this spatial environment, but you have watched how at least one, and possibly several, teachers establish person-to-person contacts with children in small groups.

You have also read about face-to-face interaction and observed it with one group of children.

As you plan for your activity with this group of children ask yourself such questions as:

1. To which segment of the physical area will I take this group so that the facilities for the learning activities will be conveniently available?
2. What do I need to do prior to the experience to arrange the physical environment and the facilities?

3. As I meet the group how will I establish "good" and "strong" initial relations?
4. What activities can I devise to promote effective group interaction?
5. How can I structure the situation and the activity so that I am not the focal point but so that each child is able to contribute something to the total learning activity?

The co-operating teacher will probably suggest the scope and content for these small group encounters; discuss with your co-operating teacher the approach you wish to adopt.

Now, plan your strategy. Discuss your content with the teacher and be confident in your own ability to lead and stimulate this small group learning experience. In this planning stage you will need to consider at least four things

(1) the objectives you want for the pupils learning outcomes
(2) the content in sequence
(3) the strategies you may use to vary the "teaching"
(4) the resources you could utilize.

On the attached sheet you should make brief notes corresponding to each of these categories. Arrange through your cooperating teacher for an observer to be with you during this activity, and provide the observer with a copy of your plan for the small group experience.

School:
Grade:
Teacher:

Name:
Group:
Date:

PLAN FOR SMALL GROUP EXPERIENCE

Nature of activity: **No. of pupils:**

Objective(s):

Content Outline	Strategies	Resources

Post-experience comments:

DISCUSSION

Following this small group experience, try to evaluate yourself. Make your comments on the bottom of the Plan. Then discuss the experience with your co-operating teacher.

Remember, you are mainly concerned with the physical, social, and psychological environment. While lesson content is important, it is not the focus for your present experiences. You must see your experience in the context of this unit--i.e. your awareness of the open-space environment.

The types of questions you should now be discussing with the co-operating teacher are:

1. During this small group activity was I conscious of each of the pupils in the group? their reactions? their interactions?

2. Was I able to use more than one strategy or was only one considered appropriate?

3. Did I utilize the resources which I had planned?

4. In what ways could I have varied the experience to make greater use of the facilities, materials and spatial environment?

5. Where did the actual experience vary from the plan? Was this an advantage? What else should I be looking for as I plan my presentation?

READINGS

The spatial environment is receiving increasing attention from researchers and critics. The readings which follow provide a small sample of the literature in this field. The purpose of this segment is to acquaint you with some of this research and criticism. In particular, you may find the categories and analysis used by some writers helpful in focusing your own attention on the spatial environment, whether in open-space or conventional classrooms.

Anderson, D. Carl. Open-plan schools: time for a peek at Lady Godiva. Education Canada, June 1970, 10(2):3-6.

Brunetti, Frank. Open Space: A Status Report. CEFP Journal, Sept.-Oct. 1971, 9(5):6-10.

Drew, Philip. Open Plan. The Canadian Architect, October, 1970, 15(12):46-57.

Smith, Douglas. Open Plan: A Postscript. The Canadian Architect, October 1970, 15(12):58.

In addition to the readings supplied you will find these references useful. These articles and extensive reading lists are available from the researcher.

Artinian, Vrej-Armen. Classroom. The Canadian Architect, October 1969, 14(12):43-46.

Justus, John E. An Educator Views Open Space and the Planning Process. CEFP Journal, Sept.-Oct. 1971, 9(5):12-14.

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Open-plan schools: time for a peek at Lady Godiva

BY D. CARL ANDERSON

The open-plan school may be the first widely-adopted innovation in education not subjected to much apparent evaluation. Some educators, suggests this author, haven't looked at Lady Godiva; they have been bedazzled by her flowing hair or her chestnut horse, and haven't tried to take a peek. Here are some pithy views from a principal who heads an open-plan school. He is not as enthusiastic as most of his colleagues appear to

IT'S THE EDUCATIONAL phenomenon of the Sixties. Throughout North America, educators and trustees have looked at the open-plan addition and the open-plan school as an educational panacea. The following illogical thought has arisen. If a small room is enlarged, children are better educated. This being true, two open rooms are better than one, four better than two, eight better than four and so on ad infinitum. Not content with open schools only at the elementary level, we are continuing, with reckless abandon, to forge ahead with senior publics, junior highs and senior highs.

Teachers, principals, administrators, trustees and department officials, even Ministers of Education, cite the educational improvements – for example, the broadloom (acoustical flooring), air conditioning (all-weather temperature control) and mud rooms (damn, big, messy closets). Everyone who works in one of these modern Taj Mahals proclaims that it is the greatest thing to hit education since religion discovered the after-life. No one wants to say that there are problems, that maybe they are failing, that perhaps they had better do some evaluation. Yet, is open-plan better than the self-contained classroom?

Every innovation in education has tended to be evaluated to death. One side proclaims, in highly documented and researched form, in journals, magazines, newspapers and conferences, all the advantages of a particular scheme. Immediately an anti-force girds its research assistants and replies negatively. At times, unresearched mud-slinging can develop, each side claiming the other is incompetent or biased, or both. The I.T.A. and its continuing struggle, or the New Castle Reading Programme, are but two examples prompting controversey in the last decade.

In open-plan schools, some educators haven't looked at Lady Godiva; they have been bedazzled by her flowing hair or her chestnut horse. It's what's underneath that counts and we haven't dared to peek. Surely we are not becoming that modest in education.

The whole idea of the open-plan school is to create space and flexibility at reasonable cost. I believe it has been proven that you do not get a greater teaching area for the same money. Costs are more than consumed by carpets and comfort controls, which are really an absolute necessity in large open spaces.

Carl Anderson is principal of Rockford Road Public School, North York (Metro Toronto) Board of Education.

Yes, you do get more space because you can incorporate former hall space into the teaching area, but many times you *lose* space because you must have teacher planning rooms, interview rooms and small group tutorial rooms.

□

Flexibility? There is far less flexibility in open-space schools than in "egg-crate" buildings. In a typical, traditional classroom the teacher can close doors and windows to outside intrusions. Try excluding unwanted diversions in an open area. We have all seen pupils working in the halls, library, or any other nook, cranny, office or room that is available, as well as the classroom. Granted you can do the same in the open-plan school, but there are fewer nooks, no crannies and far more diversions. Teachers can group pupils and exchange classes more easily in the open setting, but *should* they do so at the elementary level?

The usual desk-type furniture has been replaced by tables and chairs; big tables, small tables, round tables, square tables, hexagonal and trapezoidal, green, white and brown tables. Little does it matter that four caretakers and a crane are required to move one table three feet. Is it unrealistic to expect an uncertain teenager or elementary school child to have some place to call his own?

Naturally, there is little need for a green board, that old-fashioned teaching aid. A tackboard for pupil displays can go where the architect decided against a window. Pigeon holes for pupils' things are more disorderly than a pack-rat's nest.

Coat rooms for 200 pupils are an absolute stroke of genius. Now there are 50 pairs of boots, 18 jackets, four hats and six identical scarves that are likely to be mixed up or lost each day. The problem is getting clothing labelled, so that the numbers of crying children and distraught angry parents are cut to a minimum.

Thank goodness for the P.A. system. All that space leads to wanderlust, a search for a quiet place to work, a more interesting learning situation, a place for a quiet nap or a spot for mischief. "Please find Willie, call Mary, send Jamie to French and tell the rest of the class to get back to their home area."

At least a child can sit on a warm floor, jump up and down and move from place to place without disturbing others. The essence and vital difference in the open-plan school is this freedom of movement.

It seems to me that many aspects of school design need to be evaluated, and changes need to be made for flexibility. What about aluminum furniture, trackless, sound-proof movable partitions, carpets that don't burn, paint that won't mark easily, elevated display and chalk boards, lockable tote boxes, and pre-numbered coat hooks and boot depositories for a start?

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How many teachers? What sex? How old? What personality? How capable? These are all questions to answer about staff. Logically, you take creative, flexible, strong teachers and turn them loose. Naturally, no time is allocated for pre-planning or continuous planning and evaluation, unless it's after midnight or Sunday afternoon.

Can any principal and or vice-principal be thrown in or trained to handle the open-concept school? Will every philosophy work? To the latter, *Yes* and the former *No* . If you want a traditional program with a traditional staff, then no training is necessary – but why then build an open school?

"Good grief, will he never keep quiet or tone it down? "

"Won't she ever stop yelling? "

"Why won't he share his red pencils with me? "

"Do you have to have vocal music while we are doing silent reading? "

"If we work co-operatively then we must time-table, and that destroys the freedom and flexibility we are trying to develop."

"I know that some people are messers and others are housekeepers, but does everyone else have to be a messer in this school? "

"No, I don't think we should teach long division skills to grade 5 pupils."

Each of these comments represents a thorn festering in someone's flesh. It is very difficult to get matching philosophies and frankness among teachers. Principals can be dictatorial, but at the risk of offending and ham-stringing top-notch teachers. It's not easy to accept criticism and take it in a constructive light. We are always walking the fine line that divides opinions today. When is a skirt length indecent? When is a child's hair too long, too messy, or too dirty? When does freedom turn to licence? When are needs really wants in disguise? These are all difficult questions for each one of us to answer. Yet the answers will often determine how well teachers get along in an open-plan school.

How much team teaching, or teacher co-operation, should there be? Some teachers believe co-operation and team teaching must evolve naturally from their needs and the needs of the pupils. Others want an organized setting in which testing, grouping and time-tabling are the immediate goals. Still others believe in offering a variety of programs and allowing pupils to make a choice. Rarely do all three meet in a compromise.

One of the most difficult areas to break down in elementary schools is that of the one pupil-one teacher relationship. Each teacher has been traditionally responsible for a register of pupils. It is difficult for her to lose the mother hen attitude and share pupils. Each teacher, like each parent, assumes he knows best and no one else can really assist the child to learn and develop.

If closed traditional classrooms are poor learning environments for some children, it may conversely be held that open, free situations are detrimental to other children. Many children cannot take the din and stimuli input of the new type of operation. Children constantly search for that quiet corner, that womb-like, under-the-table place of serenity, so that they can keep their sanity. It has always been held that a child studies and learns best when he is free from external distractions. How many now say that it doesn't matter, that children learn to shut out noise?

Children tend to do a tremendous amount of wandering unless the classroom teacher has a program that is well-organized and planned, and communicates that organization and planning to the children. But too often teachers and pupils tend to opt out. It's excused by terms such as "the need to grow," "to develop responsibility," "to create awareness of the world around," and "to build social interaction."

These sayings too often spell out IGNORE (I gonna notice nothing re education) when what should be done is TEACH (the educator aims children's hearts, hands and heads). With the latter proposition, the children will learn, be educated, interested and happy. I am sure we are boring and frustrating too many children by making them feel we don't care.

□

What children should be placed in open-plan schools? If one looks at children, has any idea of the world around him and has delved into the rudiments of the psychology of the growing child, a certain clarity of thought should result. My observations have led me to believe that *primary* children and the *seniors* of high schools should be in an open-plan.

The small child who enters school has been in a relatively unstructured learning area consisting of his home, the immediate outdoors and elsewhere under the protective care of an adult. Kindergartens add a bit more structure, many more children and a more confining space. In the past, grade 1 must have been a traumatic experience for the child because of its very structured and confining nature. This has changed, I hope, with the need for learning by experience, the need for movement, especially with boys, and the need to be gradually assimilated into a more formalized learning situation. The only answer to primary education seems to me to be the development of open-space pods for the 4- to 8-year-old group.

As children grow into their teens, the body changes. The increasing maturation, the unsureness of themselves as persons, and the increasing need for approval contribute to an unsure-cocksure type of individual. In order that time be gained to ensure an orderly transition from child to adult, a more structured system is required. The child needs reassurance that he is useful, that he is learning, loved and living and that adults care and are interested.

This can best be done in a free yet ordered universe – best accomplished in the *closed* classroom concept.

As children mature, become better educated, settle down and know where they are going, they are more able to choose wisely and make good use of time. At this point in growth, additional freedom and freedom of choice is a prerequisite for in-depth study and maximum social, mental, moral and physical development. Thus the high school, university and other post-secondary educational institutions may best be served by the flexible open-space type of school which allows for the ultimate in freedom, responsibility, and co-operation.

□

Nothing will work without planning, supervision, involvement and evaluation. Too often teachers are thrown into an open-plan with a pupil-teacher ratio of 35:1, a handful of Ontario P.I., J.I's, other free and flexible courses of study and told to go. Too often children are told to do their own thing, while the teacher does *his* own thing; the result equals nothing.

If a satisfactory program is to develop, planning time must be given, not at 4:00 p.m., or after supper, Saturdays or Sundays, but during the school day. This time should also be given at regular intervals. At least one day a week, school should dismiss at 2:30 p.m., and teachers should be instructed to plan co-operatively the work for the following week, criticize the work of the week before and attempt to profile a few children. Teachers and school boards should try to see that such planning time is obtained.

It is much too easy for teachers to opt out of teaching, by not developing a course of study. When this happens children opt out, and everyone looks busy going in all directions to nowhere. Children must know where they are going and must be helped to get there. This means that the teacher must plan a program to meet needs and not satisfy wants; that a teacher must be more involved with each child at all times than ever before. It's hard work and anyone who is not willing to slave had better stay away.

To make an effective program, teacher strengths must be assessed and each member of the team in an open-plan must be willing to sacrifice his pride and possessive nature to the common good. Use the strengths of teachers to develop a program, to communicate it and to have others develop it. If a teacher can't contribute fully to a child's development because he lacks teacher skills then he must be willing to see that child developed by another member of the team. Everyone must opt in.

Perhaps the greatest danger, not only in open-concept schools but in closed classroom situations, comes from the teacher who attempts to meet individual needs. For some unknown reason teachers have interpreted "meeting individual needs" as creating 35 different programs in each subject area. In other words, 35 individual and different things are being done at any one time. The result is chaos. There has to be grouping if a teacher is going to keep track, record and assist pupils. I have yet to see a teacher effectively having 35 different things being attempted at one time by 35 pupils. Can you picture the scene?

— To summarize, open plans work under the following conditions: when there is space flexibility, staff is given planning time, teachers have similar philosophies in program, housekeeping, and discipline, when there is a variety of teacher strengths, when there are meaningful programs, when pupils work under teacher guidance, and when there is a frankness, with respect for others.

They won't work when: pupil and teachers do their own thing, no goals are set, noise is encouraged, organization of material centres is non-existent, wandering is allowed, constant evaluation and teacher assistance is missing, and when staff co-operation is poor.

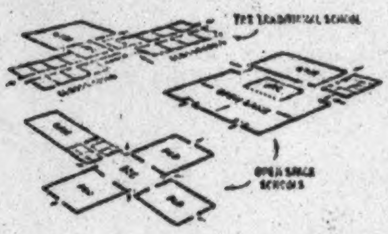
Build them open, but take care! Take a look around you. See what's really happening. Know where you are going, and why, and what you are going to do when you get there. □

CEFP Journal 10/71

OPEN SPACE: A STATUS REPORT

by Dr. Frank Brunetti, Director, Special Projects
School Planning Laboratory
Stanford University

The open space school represents a significant departure from the traditional school building that we have known the last hundred years. Rather than a series of classrooms of equal size arranged along corridors or vertically in various levels, the open space school is composed of larger areas lacking interior partitions in which the visual and acoustical separation between teaching stations and classroom areas is limited or eliminated.



To a large degree open space schools have been stereotyped as "larger self-contained boxes." A common picture brought to mind by the term "open space" is a large loft area, unbroken by interior walls, occupied by several class groups and their teachers. Actually open space schools vary widely in design characteristics. While the most predictable feature of the conventional school building has been its rows of standard size classrooms, the most predictable feature of the open space school is its *unpredictable* spatial organization. Instructional areas ranging in size from two to over 30 equivalent classrooms arranged in various configurations have come to be called "open space." While space becomes increasingly open as square footage increases and the use of partitions decreases, open space buildings range from those that make extensive use of flexible partition systems and are commonly referred to as "modified" open space to those that do not have any floor-to-ceiling partitions and are truly "open."

The wide variation in specific design configurations and varying practices in the use of demountable and operable partitions has made it difficult to pinpoint exactly when or where the first open space school was constructed. For example, operable partitions have been used to separate classrooms in conventional designs for over 10 years. However, buildings having several classrooms combined to form one open instructional area can be traced back 8 to 9 years.

TRENDS

It is generally recognized that California set the early pace in open space development on a large scale, but within the last four years the majority of new schools around the country have been of open design. As part of the open space research program at Stanford a survey was conducted in 1970 to determine what national trends had been established in recent years.* Of over 2,500 new schools constructed in 1967, '68 and '69 in 43 states, over 50% had open type designs. Trends in specific states varied from California where only 16% of the schools were "conventional" to New York where the trend was reversed with only 19.9% open schools. Other states reporting a high degree of open space development include Florida, Texas, Washington and Wisconsin. It is noted that the schools in the open category had originally been classified as those with true "open" plans and those with open space "modified" by flexible partition systems; as compared to 25% of the elementary schools, only 14% of the high schools had open plan areas as the use of operable and demountable partitions in open space is much more common in secondary schools.

An analysis of the schools in the Architecture Exhibit at the 1971 AASA convention revealed similar results. Although percentage distributions for elementary, middle and high schools were somewhat different than the national survey, the trend toward open space was dominant in the exhibit. The influence of open planning was strongest at the elementary level as only nine percent of the elementary schools were of conventional design as compared to 61 percent of the high schools.

The results of both surveys are summarized below:

Table 1
Open Space Trends
National Survey 1970
(three-year period 1967-69)

	Open	Conventional
Elementary	54%	46%
Middle	52%	48%
Senior high	52%	48%

AASA Convention
School Architecture Exhibit 1971

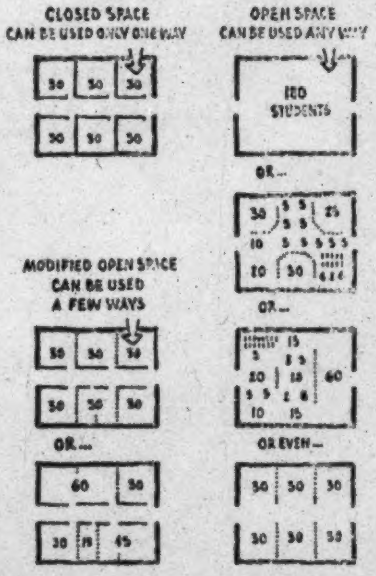
	Open	Conventional
Elementary	91%	9%
Middle	66%	34%
Senior high	39%	61%

WHY?

As we have seen above, a trend toward open space development has been firmly established the last few years. However, the reasons as to why open space has replaced the classroom are less clearly defined. Attempts to rearrange the interior space of the school building into other than standard size classrooms have come about during a period in which theory and practice in both education and architecture have changed.

Most open space schools have been planned on the basis of new requirements brought about by new curriculum materials and equipment, new student and staffing organization, and new time allotments for instruction and planning. Thirty superintendents who have pioneered open space in various school districts throughout the country identified the four major reasons as to why they build their schools as follows:

1. To better meet student needs through individualization of instruction.
2. To better use teacher talents and time through cooperative staff organization.
3. To allow for changes in organization and use of space over time.
4. To provide for an environment of change through experimentation and innovation.



While these reasons are general in nature and perhaps do not include other common influences, they do involve three factors that form the basic framework of most open space schools—change, people, and behavior. If these factors are combined, they focus directly on changing roles—the role of the student and the role of the teacher.

The process of translating such terms as "individualization" and "cooperative staffing" into concrete program elements of people, time, materials and methods has generated a high degree of variability in specific programs. The most common emphasis has been placed on developing programs that take into account individual rates of progress and organize learning experiences around individual and small groups

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*See *Open Space Schools Project Bulletin*, Number 1, March 1970, School Planning Laboratory, Stanford University of students rather than class groups of 25-30 pupils. Most school staffs are organized into formal work teams of two or more teachers who cooperatively plan and coordinate instructional activities.

Not all open space schools have resulted from planning based upon well developed philosophy, values, attitudes and goals however. Some school superintendents have adopted open space in an effort to reduce the rising costs of school construction. Others have jumped on the open space bandwagon because of trends in neighboring school districts and often produce carbon copies of "exemplary" schools.

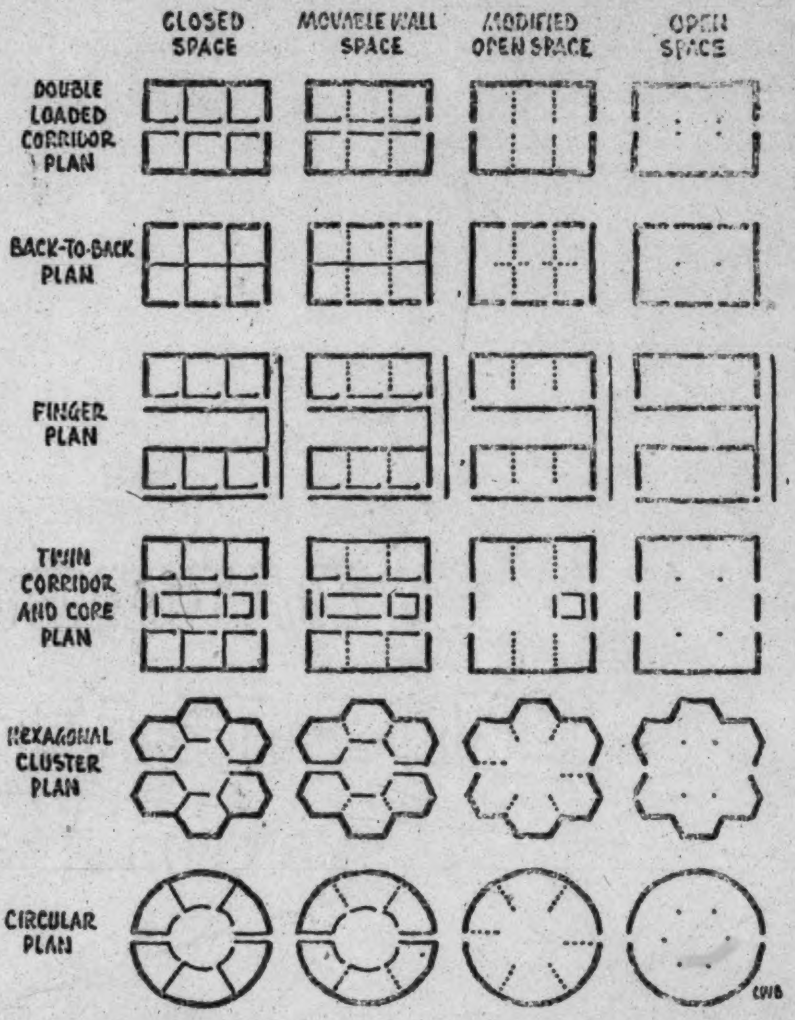
In some communities open space schools have been met with adverse reaction from parents who associate nontraditional architecture with controversial influences such as " progressive" or "informal" education. Still in other communities school staffs have moved into new buildings with little thought as to why they were there or how they were to use the space. This problem is best expressed by one principal who remarked, "We had little planning time, some liberal philosophy, and confused direction." Anti-open-space feelings often result among parents in these situations. In most cases the problem of adverse reaction to open space has been countered by including parents, teachers, and administrators in a comprehensive planning program that carries on well after the school is occupied.

EVOLUTION OF SPACE

Has the wide variation in specific design configurations and programs occurred in a random fashion or has open space development followed an evolutionary pattern? This question is being asked with increasing frequency by educators and designers who are faced with the perplexing problem of having to determine what size and arrangement of spaces will best serve their needs. As we have seen above, many factors have influenced open space--not all of an educational nature. The problem is further compounded by the fact that the majority of open space schools have been constructed within the last four years. However, by studying school districts that have had experience with several open space schools and by isolating specific schools at various time intervals throughout the last 8-10 year period, a developmental trend can be identified. Basically space has been affected most by changing characteristics of three functional requirements that are found in most open space programs:

- the need for variable size groups,
- the need for variable instructional methods and materials, and
- the need for variable staffing patterns.

Initially open space was a simple modification of the self-contained classroom; most commonly from three to six classrooms were grouped into open "pods" or "big rooms" to accommodate an equivalent number of class groups and teachers. For example, two of the first open space instructional areas were four classroom pods included in conventional buildings at the Lewis Sands Primary School in Chagrin Falls, Ohio (1961) and the Dilworth Elementary School in Cupertino, California (1962). Although these two big rooms were entirely open, many of the first open space schools were essentially of conventional design but replaced permanent walls with folding partitions. It is noted that the size of most pod-type open space has been based upon the number of teachers that would work together on a team usually within grade level.



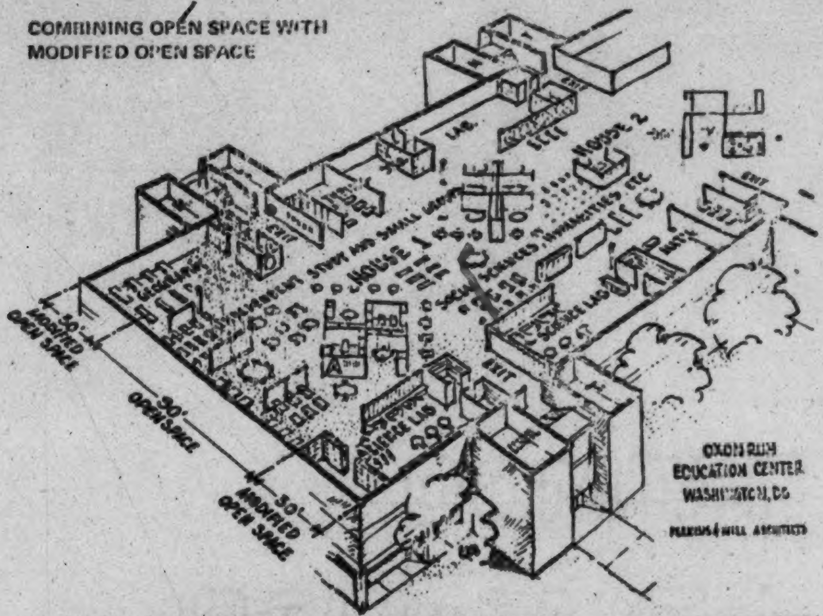
A modification of the basic multi-classroom pod has been the inclusion of "commons" areas, "activities centers," and "resource centers." Those areas add square footage to the classroom cluster and have been used in various ways--as satellite libraries that bring resources closer to instruction, as extended learning areas that accommodate diverse activities, and as buffer zones to separate class groups.

Clearly, the majority of open space schools fall into the pod-type category. An analysis of 150 floor plans collected from throughout the country in 1970 revealed that 75% were composed of several pods of the same size and an additional 10% were also composed of pods, but of variable size. Although considered by many to be "first generation" open space, the influence of the first big rooms is apparent in many new schools. The majority of open space schools in the AASA exhibit consisted of enclosed classroom clusters designed to accommodate specific staffing arrangements.

A significant number of new schools in the last two or three years depart from the first generation schools and are composed of large areas of undifferentiated space that can accommodate the entire student body and teaching staff.

School administrators involved in planning those schools indicate that efforts to continually improve individualized programs create new staffing, grouping, and instructional requirements that do not conform easily to enclosed pods of predetermined sizes. Teachers and administrators who have had experience with both the pod schools and loft schools indicate that the larger open spaces provide a wider range of alternatives for creating a variety of spatial arrangements. The most common limitations of the pod-type school is restriction of the size and structure of teaching teams and overloading some pods due to a change in grouping plans or enrollment patterns.

COMBINING OPEN SPACE WITH MODIFIED OPEN SPACE



The wider range of activities created by individualized programs has created a greater need for *closed* space adjacent to open space. Newer schools include perimeter areas that are closed but easily accessible from adjacent open areas. Operable partitions that separate a classroom within open space are seen to be undesirable because individualized activities seldom conform to a classroom-size area.

This last point reinforces a growing awareness among planners and designers that open space cannot be adequately planned using the equivalent classroom as the main unit of floor area. A growing number of schools have replaced teachers with paraprofessional aids, thus reducing the student-*adult* ratio. Activities are seldom carried out in class size groups in many schools. There is a growing need to develop planning guidelines based on an activity basis.

EFFECTS OF OPEN SPACE

In the final analysis the true merits of open space can only be judged by its effects upon students and teachers. A wide range of opinions and observations have been made as to its effectiveness with few based upon sound evaluation and valid data. Some advocates claim that open space automatically produces high achievement and better teaching, while those in opposition argue that open space has created unneeded chaos and confusion. Whatever the argument—positive, negative or neutral—the question asked most often is what effect does open space have upon producing higher achievement as compared to the self-contained classroom. A related question asks to what degree is teacher performance improved in open space.

The School Planning Laboratory, under grants from Educational Facilities Laboratories, has been in the process of conducting a long range research and development program—the School Environment Study—to determine the overall significance of alternative spatial environments for students and teachers. We have found that the problem of determining the effects of various spatial configurations on human organization, behavior and attitudes is a highly complex and time consuming task. Before the questions related to student and teacher performance can be answered, there are many intervening factors that must be considered. It is unlikely that the school building itself has any direct effect on whether children learn to read better or teachers are more inspiring; rather, it will permit or restrict certain functions that may or may not be related to performance measures. If functions related to performance have not changed—no change in staff organization and relations, no change in program planning and coordination, no change in curriculum, no change in student-teacher relations, no change in instructional strategies—the residual effect of space upon student and teacher performance will very likely be small. We are, however, encouraged by the evidence we have gathered to date, some of which is presented below.

There have been no consistent differences in academic achievement in open space and conventional schools as measured by standarized achievement tests. There are examples of reading or math scores to show higher learning rates in either open or conventional schools in the same school district, but there has been no control for such general factors as socio-economic status or I.Q., let alone those variables that would isolate space as a strong determinant factor.

Most educators feel that standardized achievement tests are too narrow in scope to measure many of the alternative learning goals of the open space school. As long as academic achievement is not adversely affected, the improvement of such factors as motivation, self-direction, self-concept, self-responsibility, inquiry skills, and peer relations are seen to be equally important in rounding out a student's achievement "profile." Improvement in these areas, which often necessitates the development of completely new learning skills, will very likely result in long-term improvement in academic achievement. While measurement is not an easy task, there is data to show that some of the alternative achievement goals listed above are being met in some open space schools. For example, elementary students in a Canadian open space school indicated that as compared to conventional schools they had attended, they were able to exercise a greater degree of self-direction, work with their peers to a greater extent, and were bored less because there were more activities, different groups, and teachers with which to work. Similar responses were obtained from junior high school students in open space.

While these differences may be expected when we compare students in an innovative program in open space with students in a conventional program in conventional classrooms, will these differences remain if the students are engaged in the same kind of program—either innovative or conventional? We found that high school science students using the same independent study materials in an open science facility and in conventional science classrooms reported being able to exercise a high degree of self-direction and independence in carrying out their activities. However, a larger percent of students in the open space facility reported high self-direction and independence and a larger percent of students in both schools using independent study materials were high in these areas than students in another conventional school with a conventional science program. These results are presented below:

Table 2
High School Students Reporting High
Self-Direction and Independence

	Independent study in open space	Independent study in Conventional classroom	Conventional programs in conventional classrooms
Self-direction	68%	58%	47%
Independence	74%	64%	54%

To obtain another measure of student performance other than students' perceptions, we asked each teacher in two elementary schools—a new open space building and an older conventional building—to rate a random sample of their students at nine learning traits, five academic traits, and four social-emotional traits. The schools were located in the same school district, served similar student populations, and used the same general curriculum materials. The rating instrument was administered twice—one in February (when the open school opened) and again in June. As compared in conventional school, children in the open space school were rated lower in February, but were higher in June. Growth was significantly greater in the social emotional learning traits—peer relations, adult relations, independence, and personal decision making.

Studies of the effects of noise on student and teacher performance are inconclusive at this point; individual perception is a strong determinant factor that is difficult to measure. While it is commonly understood that noise can become a problem in any school, it is felt by many to he more of a problem in open space. We have data to indicate that the type of activity is far more important than space. For example, in the three high schools described above we found that students in the independent study programs in open space and conventional classrooms were distracted to a much higher degree than students in conventional classrooms with a conventional program during non-laboratory activities. However, distraction was low in all three schools during laboratory work.

Table 3
Students Reporting Noise As A Problem

High School Science	Independent study in open space	Independent study in conventional classroom	Conventional programs in conventional classrooms
Distraction during study	62%	76%	34%
Distraction during lab	33%	39%	28%
Elementary Schools	**Individ. program in open space**	**Conventional program in open space**	**Coventional programs in conventional classrooms**
Class is too noisy most of the time	54%	19%	56%
Distracted most of the time	27%	9%	31%

To answer a more common question of whether teacher teams in open space using conventional curriculum materials can achieve greater variety in the instructional program as compared to teachers in self-contained classrooms, we recently conducted observations of 22 teams in several open schools and a similar sample of teachers in self-contained classrooms. Preliminary analysis of the data shows that activities and groupings in math, reading and social studies are more variable and less of a conventional nature in the open space schools. More students in open space were engaged in non-group oriented work, more self-directed activities, less waiting and listening, but at the same time were engaged in slightly *more* "traditional" reading and writing activities. Grouping patterns were less traditional in open space as fewer students were engaged in class groups and significantly more involved in social studies, 76% of the time in self-contained classrooms were spent in large class groups as compared to 48% in the open space schools.

Teachers in open space worked more closely with individual students on a one-to-one basis and with small groups. Teachers in the self-contained classrooms directed group activities to a greater extent. Students in self-contained classrooms spent 43% of their time in social studies waiting [illegible] listening to the teacher talk as compared to 28% of the students in open space. Teams of three and four teachers were far more successful in bringing about the changes described above. Teams of two and five or more looked much like single teachers in classrooms.

The effects of team or cooperative structure in open space on some aspects of teacher performance cannot be overstated. It is true that problems in interpersonal relations that hinder effective team development is probably the most important problem that occurs in open space. At the same time, however, as seen above, teams can be more effective in bringing about greater student involvement and less group oriented work than teachers in self-contained classrooms. In other studies of open space schools and conventional schools we found that team structure and open space bring about greater interaction about teaching tasks, curriculum development and student problems. Teachers in open space provide each other with a great amount of advice and feedback about their teaching and have even developed collegial evaluation processes.

A study of three elementary schools yielded similar results. However, it appears that noise in the self-contained elementary classroom may be more of a problem than in high school. Only 19% of the students in an open space school indicated noise was a problem as compared to 56% of the students in a conventional school in the same district; both schools were using the same curriculum materials. Fifty-four percent of the students in another open space school using a highly individualized activity oriented program felt noise was a problem. Teachers in all three schools reported that they were bothered by noise to a much greater degree than their students. The students also reported that their teachers were bothered by noise to a much greater degree than they were.

The open space school also has been criticized for a lack of privacy. Our data from the three high schools and elementary schools do not support this argument. From 40% to 48% of the students in all three high schools indicated a strong need for both acoustical and visual privacy. Over 50% of the students in the two open space elementary schools reported that they were able to find a place to study when they needed it as compared to only 23% of the students in the conventional school.

Table 4
Elementary Students Reporting
They Have Adequate Space For
Individual Study Activities

Individualized Program in open space	56%
Conventional Program in open space	50%
Conventional Program in conventional classrooms	24%

While these data are far from conclusive, we are analyzing additional data that indicate such factors as density are far more important than space in considering noise, distraction, and privacy. If these factors are held constant it would appear that open space provides more opportunity to control negative effects.

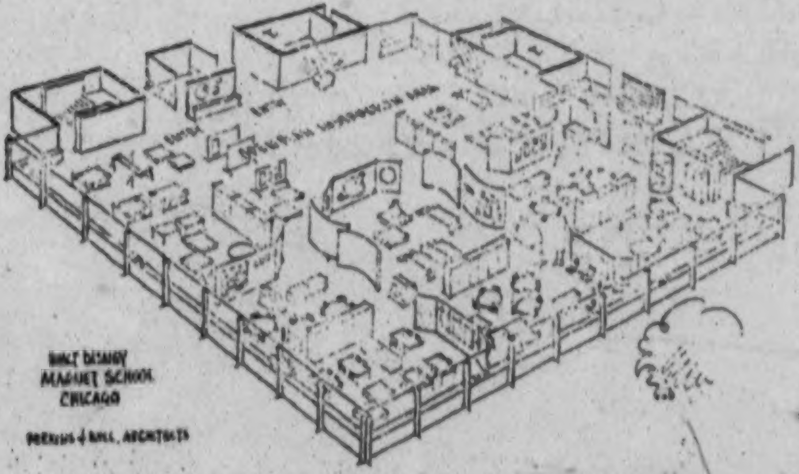
Through observation, student and teacher activities and grouping patterns can be studied to determine if various functional objectives such as increased student-student interaction and small group instructing less teacher directed activity have been attained. It appears that these types of activities can be maximized if a special individualized program is implemented in open space. For example, a study conducted by the Maryland State Department of Education of an open space school with a special individualized program and a conventional school with a standard math program showed wide variances in grouping patterns. In the open school 41% of the activities were in groups of 1-15 as compared to 11% in the conventional school, while only 15% were large groups (31-40) in the open school as compared to 52% in the conventional school.

Although the loss of individual autonomy can be a problem in teaching teams, we found that when we asked teachers how much control they had over their own task performance (autonomy), teachers in open space reported a higher degree of self-control! Further analysis of the data showed that autonomy was higher in teams because of the support team members provide in times of crisis. The teacher in the self-contained classroom is often isolated from receiving help when she needs it.

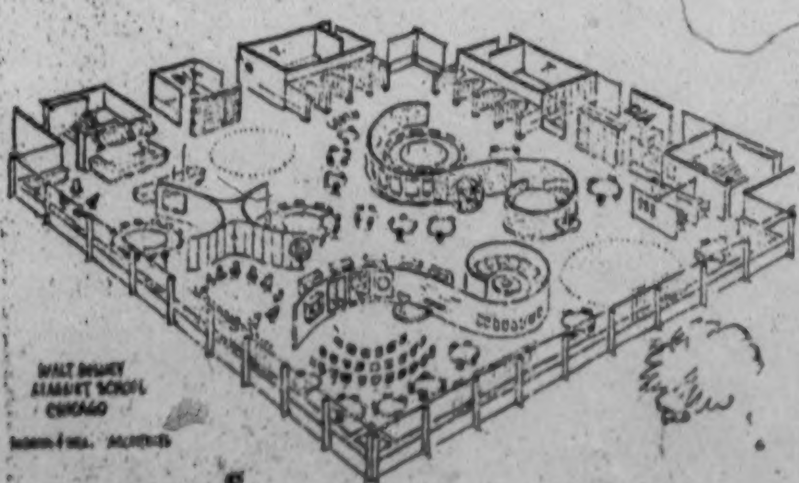
Teachers in open space schools also expressed considerably more satisfaction with teaching than teachers in self-contained classrooms. Forty-six percent of teachers in nine open space schools were highly satisfied with teaching as compared to 28% of teachers in a random sample of conventional schools. Again, team membership was single most determinant factor.

Table 5
Teachers In Open Space And
Self-contained Classrooms
An Organizational Analysis

	Open Space	Self Contained
High interaction with colleagues on teaching	70%	48%
High informal evaluation among colleagues	61%	32%
High self-control of work (autonomy)	86%	70%
High job satisfaction	46%	28%


WALT DISNEY
MAGNET SCHOOL
CHICAGO
PERKINS & WILL, ARCHITECTS

200 STUDENT OPEN PLAN INSTRUCTIONAL AREA ILLUSTRATING THE GREAT LONG RANGE AND DAY-TO-DAY FLEXIBILITY OF OPEN SPACE


WALT DISNEY
MAGNET SCHOOL
CHICAGO
PERKINS & WILL, ARCHITECTS

OPEN PLAN

Among educators the response to open space has been surprisingly clear cut. The division of opinion between the supporters and opponents of open space would seem to be based less on a thorough evaluation of the advantages and limitations of open space than on an expression of personality. This is unfortunate because it tends to obscure the real issues surrounding the open space question.

My objective in collecting the following opinions and observations and then assembling them so as to create a debate on open space was to uncover the real issues, to establish what does actually happen. One firm impression which arises from this discussion is that the opponents of open space (the so-called conservatives) are not merely reacting against change. There exists fairly substantial evidence to support the conclusion that open space may produce an educational environment inferior in many respects to earlier, more traditional architectural solutions. I have attempted to present arguments from both sides, but I am forced to admit that the rationale for open space and the over-optimistic predictions that it would open up a new era of educational freedom and innovation do not seem to be borne out by the facts. What went wrong and why? I hope that the following debate may clarify some of the fundamental issues and suggest where the mistakes were made.

Does the unsatisfactory performance of open space imply a wholesale retreat back to the traditional enclosed classroom? I think not! The essential weakness in the argument of the proponents of open space is that they have placed far too much emphasis on the physical environment. Far too often solutions to educational problems and goals are conceived of in technological and physical rather than human terms. No amount of sophisticated technology can adequately replace teacher skill, ingenuity and, above all, imagination. It is not surprising that a culture based on a materialistic philosophy of life should seek physical solutions to human problems. What is required is to seek solutions in terms of societies' human resources, in terms of people, rather than architecture.

It is worth looking at the solutions which less privileged societies than Canada and the USA have achieved. With meagre resources at their disposal they have been forced to make greater use of their human resources. It is likely that such a survey would reveal that opportunities for innovation, for individual learning programs, etc., can be achieved in much less sophisticated environments that are presently considered essential. *Philip Drew*

The underlying assumption made by many of the proponents of open space is that there is a unique architectural solution which best fulfills the functions generated by a particular educational program. It follows, therefore, that as education undergoes change, the educational container must be capable of undergoing transformations of its physical environment in order to meet new demands. The following observations not only raise doubts as to the veracity of such a concept but imply that the school itself may not be nearly as essential to the educational process as one would at first suppose.

1: Relationship between teaching and school

Socrates taught in the gymnasiums of Athens, and many centuries later Pestalozzi began his activity as an educator in a farm building by Neuhof near Zurich. Besides these two exemplary cases, there are many others in the history of education which show that a school can be excellent even when it is housed in an inappropriate, or even ugly, building. On the contrary, there are many cases of buildings considered excellent which house schools of very poor quality. We can be certain, then, that there is no direct and reciprocal relationship between architectural quality and the quality of the educational system. Architecture, because of its super-structural nature, can modify the environment directly, but it cannot dictate the activities that go on in the environment.—AJS PAGE 20*

Shadrach Woods suggests that the proper environment for education is not the school but the city.

We see the city as the total school, not the school as a "micro-community". . . . education, then, is urbanism. . . . the degree of integration of education and urbanism is related to the degree of integration of things and people in the city.—

2: Relationship between architectural order and educational philosophies

The rationale of open space may well have arisen because of an identification of a certain type of architectural order with an authoritarian and rigid educational philosophy.

The correspondence is particularly evident in the school buildings where the principle of formal order which governs the architectural composition mirrors the principle of disciplinary order which is given as the definition of the purpose of educational activity.—AJS PAGE 20

Underneath an architectural language which is different, the same compositional structures can be seen which organized the medieval cloister schools or the barrack-schools of the nineteenth century; distinct separation between interior and exterior, plans based on simple addition, rhythmic cadences of the facade elements, monocentric views, monotony of materials, technical austerity, decorative repetivity, etc. and this compositional structure mirrors the authoritarian procedure of educating an elite to exert cultural control over the whole society in the name of a particular social class to which the elite itself belongs. Authoritarianism and the aesthetics of order are correlated products of the rule of the class in power.—AJS PAGE 21

3: Formal doctrine of open space

The architectural concept of open space which was a leading idea in the development of modern architecture and such educational concepts as flexibility, individual learning, the whole spectrum of educational innovation in fact, developed separately for more than half a century. During the fifties educators and architects within the United States (especially on the West Coast) arrived at a synthesis of these two philosophies. Since then what began as a few isolated experiments has been wedded into a comprehensive philosophy of school design. This is the formal doctrine of open space.

With all this juggling of walls in an effort to make form follow function, it was inevitable that someone should think of leaving the walls out altogether. . . .—EFL PAGE 16

The continuing effort to devise educational containers which mold themselves to the fluid activities within, instead of the other way around, has led to a new and burgeoning phenomenon in school house architecture: the school without internal partitions.—EFL PAGE 3

In the drive for schools better equipped to accommodate newly fluid arrangements of people and time, and better able to respond to the certainty of change, the walls around the classroom box have become one of the prime targets.—EFL PAGE 15

Architects have shown for many years a predilection for open plan-

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See end of article for reference key and source of quotes.

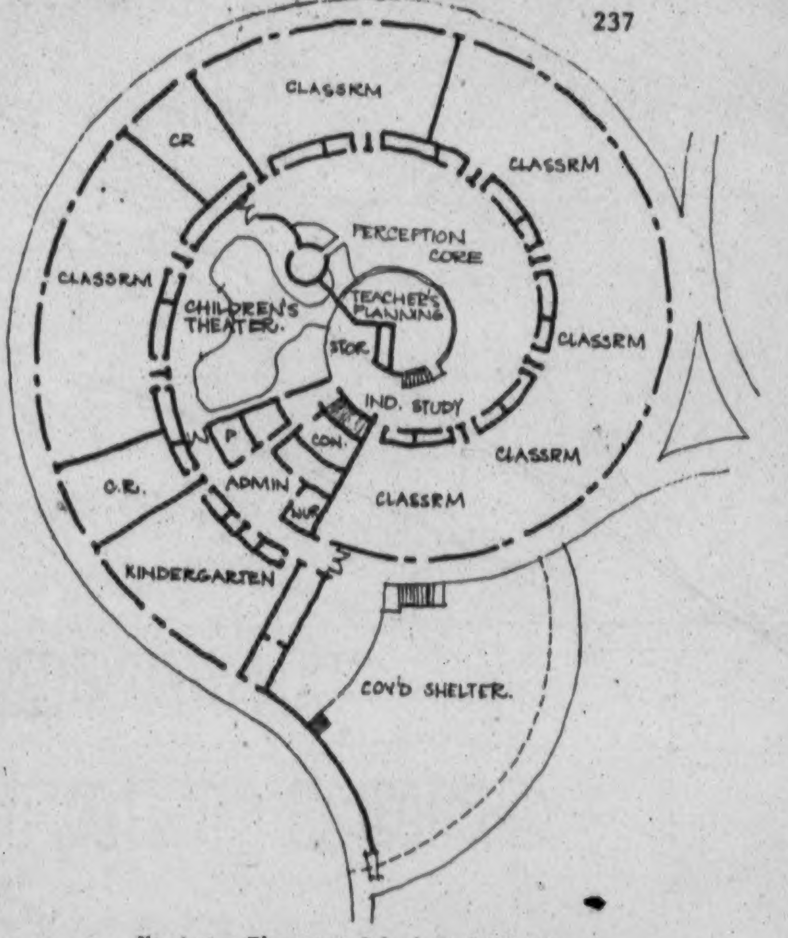
ning, where the barriers that separate one building space from another are slowly lessening in importance. . . . Most of us architects believe that this predilection is the mark of a contemporary thinker, and so, open planning is good.—FDRJL PAGE 24

The Kensington School was unique in many respects. Unlike so many educational experiments its achievements and failures were observed, analysed and evaluated. As a consequence we now know more accurately the consequences of educational innovation. More than that Kensington provided an almost ideal experimental situation to test the formal doctrine of open space.

The logic of the planning—in the building specifications for the Kensington School, the original rationale is stated straightforwardly: (1) the ultimate goal is to enable all the children of all the people to develop to the limits of their potentiality (2) the educational program facilitates this (3) the physical structure facilitates this (4) the program changes because society changes (5) the building remains, hence it must be flexible and adaptable. Such a simple statement belies the complexities lying within.—SLMKPM PAGE 196

A formal doctrine contains statements of goals and objectives toward which one strives. Also it contains subgoals to be approached "on the way" toward the more general and ultimate objectives. Similarly it contains specification of means, alternatives in action, in social structure, in procedures which contain hypothetically high probabilities of attaining the goals in effect, it is a plan, a guide to individual action and group activity. Kensington's formal doctrine possessed this manifest function. The building was built according to the building specifications.—SLMKPM PAGE 227

With the gradual breakdown of the Kensington program and the growing disenchantment of the teaching staff, the role of the two observers became increasingly to document and analyse the causes for Kensington's apparent failure. Their observations and insights provide a remarkable record of the working out of the formal doctrine.



Kensington Elementary School, St. Louis, Missouri.

They were never able to make workable the program for the large majority of the children.—SLMKPM PAGE 119

In science . . . the faculty estimated that some fifteen percent of the pupils were receiving an excellent individualized program of independent study. The remainder of the children had considerable difficulty.—SLMKPM PAGES 334-5

As it stands now the total shift has been overwhelming and the people have retreated.—SLMKPM PAGE 295

The Kensington program and philosophy, in every sense of the word, is paralyzed.—SLMKPM PAGE 257

In addition to this, the notes indicate that "almost everybody is giving serious thought to not coming back next year" . . . as the introductory epilogue notes, this is in fact what did happen.—SLMKPM PAGE 406

It seems noteworthy to comment that such glowing words as "facility and speed, mobility and flexibility", while rallying cries for emotional appeals, the actuality is much more lack of facility and speed, mobility and flexibility.—SLMKPM PAGE 120

The reality of what was happening at Kensington and the reaction of the staff to this experience, together with attempts to conceal or mask problems which preceded open acceptance of the actuality, leads Smith to a number of significant observations.

Thus, the first image of the school was projected. As this attracted increased attention, further aspects of the formal doctrine were needed, were available and were utilized to present the image of the school. As awards were won for architectural design, popular news *media began to describe the program which was equally unique. The process spiraled.*—SLMKPM PAGE 233

Eugene also was showing around some friends of his who are school people in Canada. Today's bulletin carried with it also a statement about observers in this school and the need to plan for these people and schedule them. I'm struck by the facade that they must see on these one day shots.—SLMKPM PAGE 233

This vision of pioneering and innovating, a belief system in our terminology was important and all pervasive.—SLMKPM PAGE 118

She feels that the entire group has been brainwashed. She likened it to the Communist attempt at brainwashing people. She gave a specific instance, the failure of staff members to use certain terminology. She did not feel that one could use words such as textbook, teach, curriculum, subject matter, and other special words. She further stated that if one could say the same things only in different words it would be quite acceptable.—SLMKPM PAGE 393

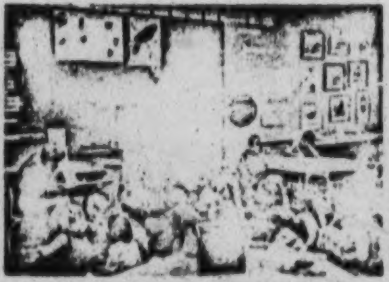
We hypothesize that the more formalized the doctrine becomes and the more internal problems that exist, the greater the degree of masking that will occur. By internal problems we mean, at Kensington, the severe staff conflict, especially in the independent study division, and the difficulties the divisions had in implementing the program as defined initially.—SLMKPM PAGE 229

The larger the change the more unanticipated events, and the more that is unanticipated the greater becomes the need for additional resources: The step by step gradual shift [a policy of gradualism] seems to temper this change of events.—SLMKPM PAGE 295

On the basis of the Kensington experience, Louis Smith offers the following alternative to the formal doctrine of open space.

It seemed to me that the only real resolution to the problem of space and the organization of the school is to have the foldable sound proof walls separating each of the so-called learning suite areas into separate rooms. This should exist from the kindergarten through the 6th grade. As teams of people find they can work together or as ideas for teams of two to teams of six occur, then these walls can be put up or taken down at a moment's notice. Anything more permanent than this becomes a real stumbling block and no walls at all is impossible.—SLMKPM PAGE 372

4: Relationship between educational innovation and open space



Open space has, in fact, been so closely linked with educational innovation that many educators assume "that open space is directly related to an innovative program". Actually the link is not so solidly forged.—EFL PAGE 49

But in most cases, the disappearance of walls has been accompanied by the appearance of less rigid patterns of teaching and learning: nongrading, team teaching or both.—EFL PAGE 4

It is not outside the realm of possibility that the more creative imaginative teachers are attracted to schools of the "open plan" design.—KBL PAGE 158

Classroom design in the schools studied did not appear to influence the utilization of classroom floor and display area. The evidence tends to indicate that the orientation of individual teachers bears a closer relationship to these considerations than do other factors.—KBL PAGE 159

Logic would dictate that there should be an important relationship between instruction and the facilities for instruction.—KBL PAGE 161

On the basis of accumulated evidence, it is the opinion of the observer that the design innovations investigated in the study have made a relatively minor impact on the character and quality of instruction.—KBL PAGE 160

It seems to the writer [Kyzar] that the problem of the relationships between instructional and plant facilities cannot become vivid until those responsible for the curriculum make clear what kind of program and what scope and character of instruction is desired and how long it will be continued.—KBL PAGE 162

Functions must be defined before they can be accommodated.

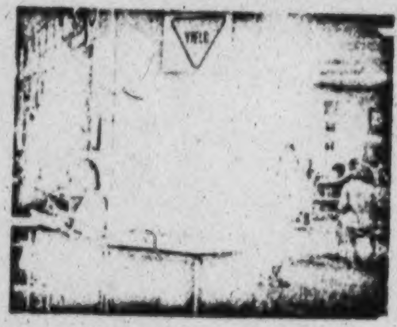
5: Criticisms of the traditional enclosed classroom

A number of the criticisms of the enclosed classroom have already been mentioned. Briefly, they are the inability of the class area to be physically modified to accommodate the demands of a changing educational program. The walls are regarded as acting as physical and psychological barriers. All too frequently the enclosed classroom is seen as being prisonlike. It is viewed as imposing rigid educational patterns on the users. The key argument against the enclosed classrooms is their lack of flexibility.

In a self-contained room the child can sometimes be the victim of one teacher's bias or poor judgement.—EFL PAGE 53

And the teacher, stripped of the four walled fortress about him and his 30 subjects, is no longer the solitary ruler of a sovereign domain.—EFL PAGE 5

6: Physical flexibility



The demand for a school which could grow and change with the educational program is the *raison d'être* for open space schools. The truth of the matter is that rigid patterns of instruction have more to do with the inflexibility of the human mind than they do with architecture.

[*Definition*] *Flexibility provided by space dividing devices, permits teachers and administrators to organize instruction in a way they wish and to select or manipulate a correspondingly appropriate setting, from the conventional self-contained class to fluid, instantaneously variable arrangements.*—GRMJ PAGE 47

More often, however, flexibility has been thought of as the ability to rearrange partitions.—EFL PAGE 15

The realization of this philosophical concept of flexibility works out rather differently.

"Flexible" buildings are conceived with a precision of efficiency that is humiliating. Their authors seem to be possessed by a single mindedness of purpose that has blinded them to real issues. Their vision of a building responding to the changing needs of its inhabitants is too cumbersome. . . . We will realize that "getting things done" in any one school building takes months of preparation. In fact, to move standard movable partitions requires the same administrative effort as that required to move a conventional block and plaster wall. So many people are involved in the process—the teacher in the adjoining space, the principal and his administrative staff and, of course, the whole hierarchy of the maintenance or "buildings and grounds" department. Wanting to change the fundamental parts of a building frequently is rather like wishing that a dog could become a horse. Real flexibility comes only through the possibility of immediate change. We can achieve immediate change not by altering a room but by altering our relationship to it. Often it will be to move to another more convenient place and the extraordinary mobility we have serves this idea. More importantly though, we have the possibility of using objects and places in different ways at different times. Children at play quickly change a table into a house; a house can become a ship.—PP PAGE 39

The source of the negation of rules was the doctrine concerning flexibility, in reality less flextibility resulted.—SLMKPM PAGES 279-281

7: Freedom and open space

Many educators regard walls as barriers inhibiting educational freedom and hypothezise that an absence of walls will ensure that freedom.

Old walls should not stifle new ideas. Identical boxes must not enforce the same program on all students and teachers; each is a unique individual. Fixed furnishings must not quash spontaneous enquiry.—GRMJ PAGE 16

But taken as a whole, innovating ideas and procedures by their very diversity, suggest that educators will increasingly want the freedom and capacity to bring teachers, students, and resources together in diverse and flexible ways.—GRMJ PAGE 16

But the primary benefit an open classroom setting offers children is the freedom to move from group to group for different levels of work. This mobility is important not only academically but physically and psychologically as well. For movement is natural to children.—EFL PAGE 53

The essence and vital difference in the open plan school is this freedom of movement.—ACD PAGE 4

8: Anxiety in open space

In their enthusiasm for open space its proponents usually omit to mention its limitations, some of which are so severe that they frequently deprive the school of those advantages which it was supposed to ensure.

Are some teachers, due to personality characteristics, better equipped to adjust and to perform at a higher level in the "open plan" schools? A corollary to this is the extent to which the "openness" creates a higher level of anxiety in some teachers than in others, resulting in improved performance or resulting in a decrease in performance.

KBL PAGE 161

Many second generation open schools and virtually all those on the drawing boards, in recognition of this, provide for the partitioning via operable walls of at least one teaching station within the big room.—EFL PAGE 41

As children grow into their teens. the body changes. The increasing maturation, the unsureness of them-

selves as persons and the increasing need for approval contribute to an unsure-cocksure type of individual. In order that time be gained to ensure an orderly transition from child to adult, a more structured system is required. The child needs reassurance that he is useful, that he is learning, loved and living and that adults care and are interested. This can best be done in a free yet ordered universe —best accomplished in the closed classroom concept.—ACD PAGE 5-6

9: Cooperation in open space

It is now generally acknowledged that for an open space program to be at all successful the teachers within any one learning area must learn to cooperate with one another, to work as a team. The quality of the educational program is determined not so much by the individual brilliance of the teachers but by their ability to work together harmoniously to achieve educational objectives.

Many teachers feel that the children also benefit from the example of seeing adults working together to solve problems.—EFL PAGE 53

And the main thing is that the teachers have *to get along.*—EFL PAGE 55

It was the opinion of the observer that more interaction was visible between teachers in the "open plan" schools.—KBL PAGE 164

. . . They hold common goals and they contribute to the reaching of the goals in an easy, warm, rational style.—SLMKPM PAGE 94

It seems clear that the question of personal compatibility or incompatibility is much more far-reaching in limiting cooperative effort than is recognized.—SLMKPM PAGE 353

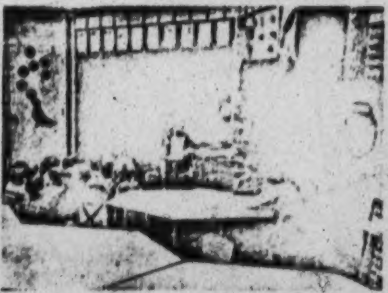
For instance, the group training laboratory accents the groupish part and in one sense the people are all in favor of this, yet they are getting squeezed very hard. While on the one hand they laud the group, on the other hand they all want to retreat to their own individual quietness and privacy.—SLMKPM PAGE 394

In addition, the children lacked adequate skills to work together in groups which was another necessary capability to function well at Kensington.—SLMKPM PAGE 99

While the design of the building with a minimum of walls emphasized and increased pupil contact, the differing faculty interpretations and enforcement in their own semi self-contained groups made for pupil confusion as students observed and interacted with those who were subject to a set of rules at variance with theirs. While the faculty had more opportunity for contact with and more reason for disciplining others' pupils who wandered into their area, there was great probability that they would request the child to behave in accordance with rules which were not advocated and adhered to by his teacher. This led to both faculty and student dissatisfaction.—SLMKPM PAGE 283

With almost no consideration to the explicit problems of the learning objectives for pupils, and of means of reaching these, the reorganization was brought about because various team members had considerable difficulty working with each other.—SLMKPM PAGE 75

10: Need to schedule activities in open space



The earlier predictions that open space would permit a freer, more spontaneous approach to learning have not been realized to the extent that it was anticipated.

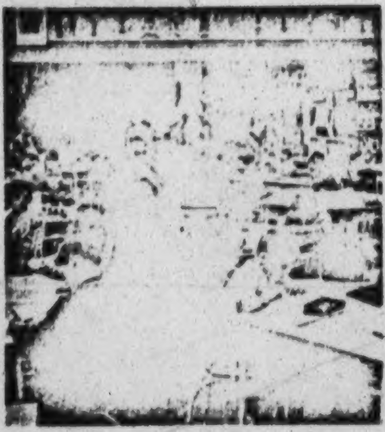
For life to proceed with order and harmony in an open room, some degree of joint scheduling of activities is necessary.—EFL PAGE 39

If we work cooperatively then we must time-table, and that destroys the freedom and flexibility we are trying to develop.—ACD PAGE 4

As noted earlier, a frequent complaint about open space is the constraint imposed by the need for sticking to a predetermined schedule, and the resulting loss of flexibility of time.—EFL PAGES 54-5

In my own self-contained classroom, I had all the freedom in the world. I could extend a learning experience or shorten it or cut it out completely if I wished. Here, I'm forced into a rigid schedule. She said that it seems very odd and yet the freedom that they wanted was the thing which inhibited them and made them more rigid.—SLMKPM PAGE 88

11: Consequences of overcrowding in open space



Open space is very sensitive to overcrowding. To understand why one must go back to the original, acoustical rationale for open space.

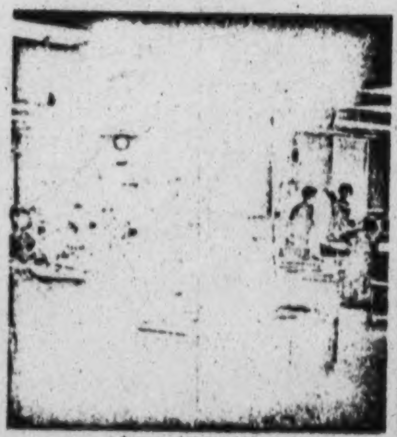
It also suggests that the overall space must be large enough in relation to the pupil population to permit adequate separation between work groups.—ACD PAGE 145

Another feature common to the newer varieties of open space is more of it. Adding the equivalent of an extra classroom to the space in the open cluster adds to the distance between groups and reduces *the risk of their interfering with one another.*—EFL PAGE 17

Most school boards experience difficulty in accurately predicting the student enrolment for a new school. It frequently happens that the enrolment exceeds the planned figure. In the case of the conventional school, the consequences of overcrowding while they may be undesirable are not critical. If an open space learning area is over-crowded, the essential acoustical separation between groups is lost with the following consequences:

With little space between groups to act as a barrier, the voices of youngsters reciting in peripheral classes could be heard more clearly than the voice of their own teacher.—EFL PAGE 30

12: Psychological, architectural and functional implications of walls



In their attack on the wall, the proponents of open space neglected to consider a whole range of functions sustained by walls. If walls are to be abolished then the functions served by them must be answered by some other means. It is fundamentally important to understand just what the wall did do. Was it just a barrier, or did it serve some other purposes?

13: Walls enclose

The failure of open space is frequently accompanied by the re-creation of enclosure.

Yet the teachers in the "open plan" schools had placed movable furniture to improvise a fourth wall so that the classrooms in the "open-plan" schools were virtually the same as classrooms in conventionally designed buildings. Also, the organization of learning activities, and their frequency of use were about the same in "open plan" and conventional classrooms.—KBL PAGE 161

14: Walls define territory

The role of the wall in defining areas to which people can relate and within which they have specific defined responsibilities is a somewhat neglected aspect of open space. Desmond Morris' definition of the territorial imperative would seem to have some relevance in terms of the design of open space in schools:

Animals fight amongst themselves for one of two very good reasons: either to establish their dominance in the social hierarchy or to establish their territorial rights over a particular piece of ground.—MD PAGE 128

Where houses have not yet been squashed up into blocks of flats, the defended area is carefully fenced, walled, or hedged off from its neighbours, and the demarcation lines are rigidly respected and adhered to, as in other territorial species . . . one of the important features of the family territory is that it must be easily distinguished (personalised) in some way from all the others. . . . Fortunately, the families concerned can impose territorial uniqueness on their dwellings in other ways.—MD PAGE 160

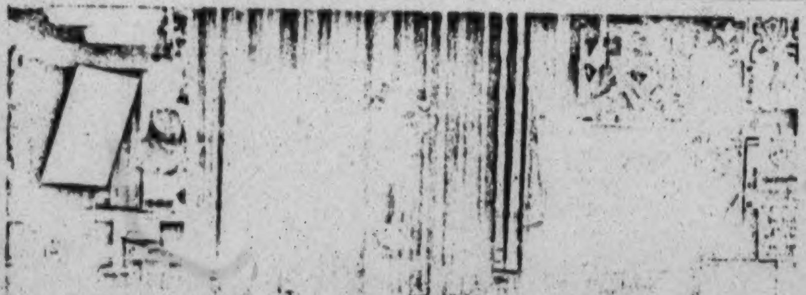
This is usually explained as being done to make the place "look nice". In fact, it is the exact equivalent to another territorial species depositing its personal scent on a landmark near its den.—MD PAGE 161

The process of imposing territorial uniqueness on the class area manifests itself in an intricate and complex series of activities on the part of teachers usually involving the display of student projects.

In terms of the physical aspects of the building and its design, once again the behavior of David illustrates the notion of spreading out over territory.—SLMKPM PAGE 367

In spite of Edward Bellamy's predictions or visions, private property remains an important aspect of our culture.—SLMKPM PAGE 370

It is very interesting to observe the response of teachers to the absence of territorial definition in open space. As often as not they use caseworks to demarcate their area. In one school (Willow Park Junior School, Toronto) which I visited, the teachers had suspended paper sculptures from the ceiling in an attempt to define functional areas, i.e. teaching stations (private) from the common (public) area. This is especially interesting because the ancient Japanese used



An improvised enclosure of crepe paper streamers suspended from the ceiling ensures a degree of visual privacy and personalization of space not possible within the larger anonymous and characterless general learning area.

to tie pieces of rice straw on plants to define sacred areas.

15: Walls protect

Primitive man erected walls to keep out his enemies. In the beginning caves and even a cliff face enhanced man's ability to resist intruders. The psychological implication of walls is one of protection, a defense against danger. The wall provides security. In terms of military engineering man has constructed some fabulous defensive walls such as Hadrian's Wall, and The Great Wall of China. In the history of civilization, walls have been a fundamental component of spatial enclosure. Only the culture of Japan provides us with an important exception. Even there the abandonment of the protective wall was restricted to the Japanese aristocracy. The Japanese peasant lived in a cave-like dwelling which reinforced his biological need for enclosure and security. The advent of the tea house in the sixteenth century, which was derived from the peasant farmhouse, was an extremely interesting phenomenon. One speculates that it may have served the cultural function of a spatial decompression chamber. Open space induces anxiety, enclosure—security, meditation. The Japanese aristocracy may have found the tea house useful as a means of alleviating anxieties generated by their open space residences. It is not a little significant that the adoption of open space by modern architects parallels the establishment of civil peace within nation states.

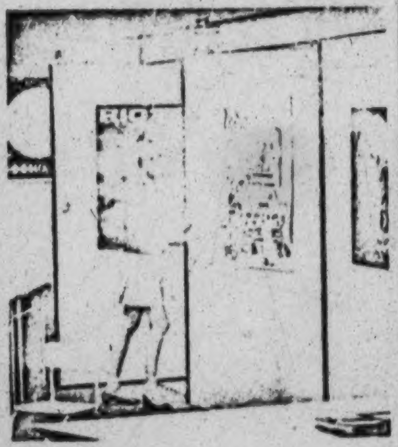
The investigators among themselves referred to it as Kensington's Berlin Wall.—SLMKPM PAGE 74

You cannot have people whose security rests on four walls.—EFL PAGE 55

The teacher, stripped of the four wall fortress.—EFL PAGE 5

16: Walls as vertical teaching surfaces

Besides its fairly obvious structural and enclosing roles, the internal wall serves a very important function as a vertical teaching surface. The removal of internal walls and partitions in open space learning areas produced a variety of responses which tend to confirm the functional validity of the wall as a vertical teaching surface. One very interesting phenomenon in open space learning areas which have insufficient utilizable wall space is the manner in which the ceiling is made to substitute for the wall. All manner of objects, displays and sculptures were observed hanging from acoustic tile ceilings. Remove the walls and what have you? A floor and a ceiling! For obvious reasons the floor plane is not of much value so the hunger for display forced teachers to take over the ceiling. Walls served a valuable function as surfaces for writing and, more importantly, of display. Such displays serve not only as a source of stimuli for recognizing student achievement but also as a means of personalizing space. The demand for vertical teaching surfaces varies greatly from subject to subject. This suggests that the amount of enclosure required for a particular subject area might well be determined by the quantitative demand for vertical teaching surfaces.



17: Scale

Scale is an important design element in all architecture. In schools the achievement of a scale sympathetic to the children who use the building should not be underestimated.

They should divide schools up, so you get to know the part you're in, as if it was your home or your friend's home.—CR PAGE 52

I'd make the school warm and small and not too big and too hot one minute and you're shivering the next. I'd have a lot of little schools. I'd have every home-room a school, separate from the rest. Then there wouldn't be all those big buildings, and you get lost in them.—CR PAGE 52

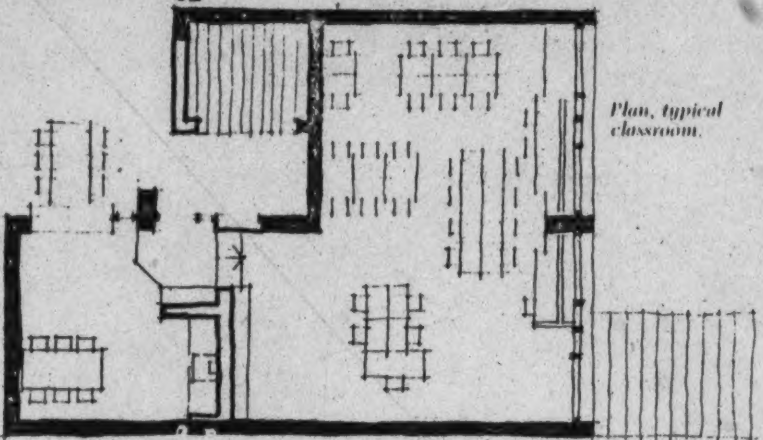
What you do, you start setting up your own schools that are in spaces to which people can relate. They don't feel intimidated by those spaces.—CT PAGE 101

And the corridors, they're just too long and you practically should have a car to travel from one part of the building to the next.—CR PAGE 49

18: Spatial variety

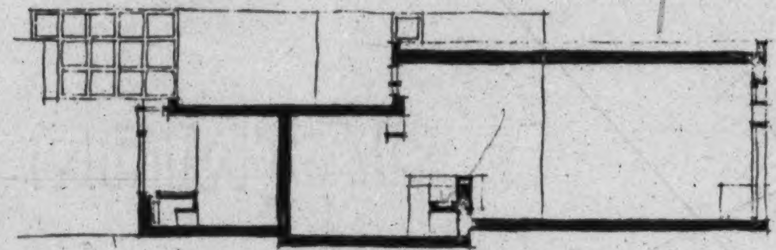
Perhaps one of the least prepossessing qualities of open learning areas is their lack of spatial variety. Not only does this result in a dull, monotonous interior, but it tends to create a mass people scale, a visual denial of the focus of education on the learning needs of the individual. There seems to be an inherent contradiction between mass scale and individualized education. The following is a definition of spatial diversity by Ronald Gross: *Diversity in the scale of space available permits selection of the appropriate three-dimensional environment for each reasonably predictable activity. High ceilinged, lofty space for large groups or vigorous action. Versatile, medium sized areas approximately the size of the standard classroom. Small intimate, low ceilinged, alcoves suit-*

61



Plan, typical classroom.

Montessori Primary School, Delft, Holland, by Herman Hertzberger.



Section for Montessori School.

able for individual study or tutorial work, etc.—GRMJ PAGE 47

Here, the classroom has been modified to an L-form and given a floor level variation of two steps, so that the child is no longer forced to take in all the other children at once. By suiting parts of the classroom to the various categories of activity—like the rooms of a house—one achieves a situation where the children disturb each other as little as possible.—IIII PAGE 61

This hall is the big communal "classroom"; the complimentary form and the extension of the classroom element taken as a whole.—IIII PAGE 61

The lack of spatial variety which Gross associates with the conventional school is equally prevalent in open space schools. It results from a lack of imagination as much as anything thus:

Another drawback to the egg crate school is its characteristic lack of visual variety. Identical structural elements—ceiling height, lighting, windows—are duplicated in room after room. Attempts to vary the effect by wall colours or minor embellishments do little to reduce the overall monotony or to offset institutional boredom with a lively change of scene.—GRMJ PAGE 22

19: Personalized space

One speculates that for children to learn effectively they must feel secure within the school environment. Too much change, too many stimuli, can be confusing. Personalised space—space within which the individual can relate, can feel safe and secure, would seem to be an essential concomitant of architectural design.

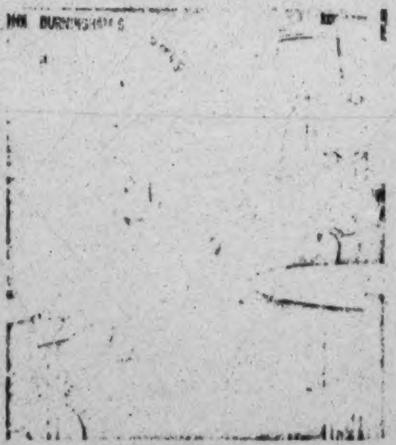
Everything must be formed so that one can make it relevant to himself according to his own nature, with adequate implications for everyone.—IIII PAGE 67

They arrange and rearrange. . . . they struggle for privacy, yet they want to make themselves and their choices and preferences and works and constructions apparent, very much so. They insist on the integrity of their own decisions and judgements, yet at the same time they constantly call upon the authority of their parents—and not necessarily out of begrudging obedience or fear.—CH PAGE 53

That we can recognize our desk by the distinctive marks (scenting P.D.) we apply implies that not only must it be receptive to our marks, but that our marks are recognized by others as useful and necessary additions to an object that is otherwise incomplete without them. . . . Sometimes the mark can be read quite simply as an extension of our character to the object.—PP PAGES 36-37

Is it unrealistic to expect an uncertain teenager or elementary school child to have some place to call his own?—ACD PAGE 4

20: Corners



Corners have an important role in both domestic and school architecture because they provide opportunities for the individual to be by himself without the necessity of severing contact with the group.

The stepped arrangement of the classroom creates a great many corners where the children can work individually or in groups near a particular classroom.—HH PAGE 61

There are small tables for individual work, and the child can work either alone or in co-operation with others at the big table by the window, or in the 'corner for self-expression', each one either alone amidst others or in social contact with them.—HH PAGE 61

Independent study—"where might such study take place?" . . . as an ideal, one would seek intimate spaces—individual niches or alcoves, preferably carpeted, low ceilinged, tucked away out of the hub-bub of the school.—CRMJ PAGE 23

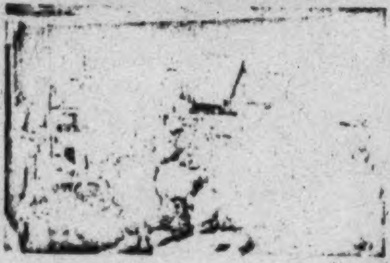
All that space leads to wanderlust, a search for a quiet place to work, a more interesting learning situation, a place for a quiet nap, or a spot for mischief.—ACD PAGE 4

We have all seen pupils working in the halls, library, or any other nook, cranny, office or room that is available, as well as the classroom. Granted you can do the same in the open-plan school, but there are fewer nooks, no crannies and far more diversions.—ACD PAGE 4

If closed traditional classrooms are poor learning environments for some children, it may conversely be held that open, free situations are detrimental to other children. Many children cannot take the din and stimuli input of the new type of operation. Children constantly search for that quiet corner, that womb-like, under-the-table place of serenity, so that they can keep their sanity. It has always been held that a child studies and learns best when he is free from external distractions. How many now say that it doesn't matter, that children learn to shut out noise?—ACD PAGE 5

They could build buildings that are better, nicer and friendlier, and the kind you can get to know every corner of it in a short while. I'll bet I could.—CR PAGE 53

21: Special activities



Open rooms being what they are, that is, large areas of generalized space, they require some adjunct spaces for specialized activities.—EFL PAGE 41

22: Mental flexibility—the imaginative perception of form and function

Much of the thinking about open space has been based on the precept that the mountain must come to Mohammed. As the Prophet discovered, it is much simpler to go to the mountain. The concept of flexibility associated with open space is based on the idea that the school environment must be capable of almost instantaneous and effortless transformation to suit the changing educational requirements. In spite of all its magnificent achievements, modern technology has demonstrated an amazing inability to cope with human problems. Physics is primarily concerned with the behavior of matter not of human beings. Modern technology is equipped to solve physical problems. More often than not the human problems go unsolved. The solution to flexibility in schools when it is approached from the angle of physical flexibility frequently produces cumbersome and clumsy solutions. This is not to say that one should not seek to use the products of modern science and technology. It is merely a warning that too heavy reliance on them is no substitute for intelligent thought. We ought to seek human solutions to human problems and if technology can help to achieve this, then we ought to take advantage of it.

Flexibility can be gained when each object has not only its obvious function but also a certain ambiguity so that, in different circumstances, they can be used in a variety of ways. If we think of corridors simply as an efficient way of getting from A to B (like people-plumbing) rather than as streets with the variety of uses they support (and all the associations they produce) we will have inflexible and unfriendly buildings rather than specifically ambiguous, rewarding and friendly ones.—PP PAGE 39-40

One might tend to think that the hall space would have a greater potential if one could move the block aside once in a while. On the contrary, its being immovable is crucial. Flexibility leaves every theoretical possibility open, in the sense that nothing is a priori excluded, but on the other hand, it does not initiate anything either. Due to its presence as the focal point of the building, the block evokes a response for any occasion, it reacts to every action and can be interpreted in a variety of ways, playing different roles, each one accommodating a different circumstance.

They use it as a platform to sit on, as a place to put things down, as a stage from which to make announcements, or just to become taller. They play games around and on it. To them it is an island—the floor the sea.—HH PAGES 61-62

That such a block can be interpreted in so many different ways means not only that it can fulfill several roles, but also that the children are stimulated by it to greater diversity in the roles they play.—HH PAGE 62

Therefore a form must be inter-

pretable—in the sense that it must be conditioned to play a changing role. It must be made in such a way that the implications are posed beforehand as hidden possibilities, evocative but not openly stated.—HH PAGE 66

Eliminating the interior partitions did work out educationally at the Lewis Sands school . . . because the open school capitalizes on the adaptability of people instead of relying on the manipulation of architectural elements. EFL PAGE 12

23: On the importance of teachers

Ultimately, no architectural solution no matter how brilliant can be successful educationally without intelligent, imaginative and committed teachers. If open space has done anything, it has made us more aware of the crucial role of the teacher. After all, education is a very intimate human experience.

"It is much too easy for teachers to opt out of teaching, by not developing a course of study. When this happens children opt out, and everyone looks busy going in all directions to nowhere. Children must know where they are going and must be helped to get there. This means that the teacher must plan a program to meet needs and not satisfy wants, that a teacher must be more involved with each child at all times than ever before. —ACD PAGE 6

Fairmont's Mrs. Swett agrees that teachers are the key to success in an open set up.—EFL PAGE 55

The success of schools without walls ultimately depends on people. —EFL PAGE 55

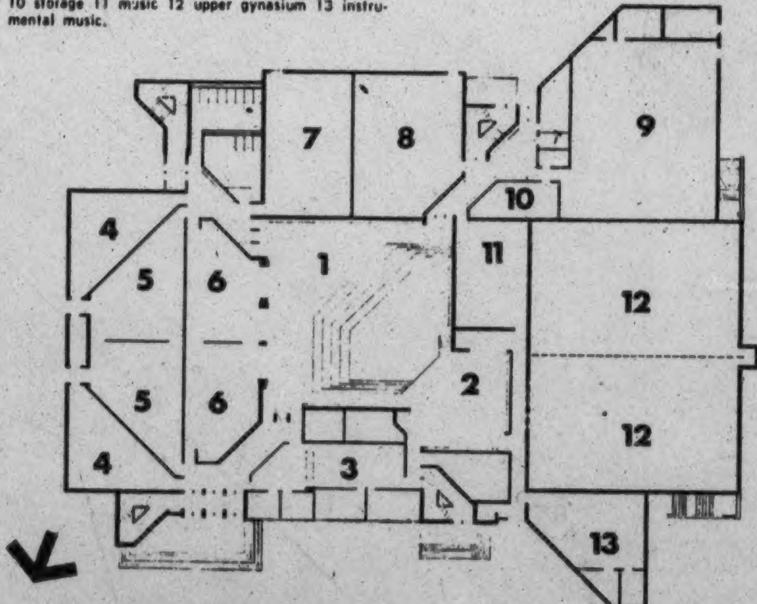
To summarize, open plans work under the following conditions: when there is space flexibility, staff is given planning time, teachers have similar philosophies in program, housekeeping, and discipline, when there is a variety of teacher strengths, when there are meaningful programs, when pupils work under teacher guidance, and when there is a frankness, with respect for others.

They won't work when: pupil and teachers do their own thing, no goals are set, noise is encouraged, organization of material centres is non-existent, wandering is allowed, constant evaluation and teacher assistance is missing, and when staff cooperation is poor.—ACD PAGE 6

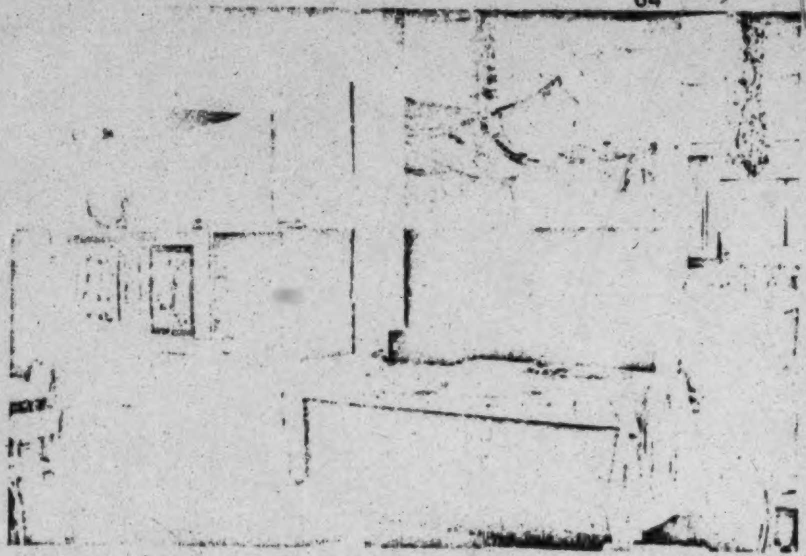
24: Conclusions

My review of the principles, implementation and educational consequences of open space has led me to question whether open space as a blanket solution to educational planning has any greater validity than the traditional enclosed classroom. Both approaches seem to be almost as arbitrary and, consequently, irrelevant to the educational process. The mistake made by the open spacers was to insist that there was one architectural solution which could be everything to everybody. In reality, it turned out to be no solution at all. Rather than viewing learning areas as either enclosed or open, as black or white, I would prefer a variety of spatial solutions ranging from black to white and including a whole series of greys (fluid space). The quality of openness or enclosure should be determined by the nature of the learning activities which a space is intended to accommodate. What is needed is greater knowledge of what happens in learning areas. What are the real, as against the supposed, functions generated by the educational activities. The vision of an instantaneously flexible environment has proved to be largely illusory. It should be replaced by a new emphasis on human flexibility, imagination and mobility. I am confident that the new school founded on these principles will prove more than capable of accommodating the new educational programs of the future.

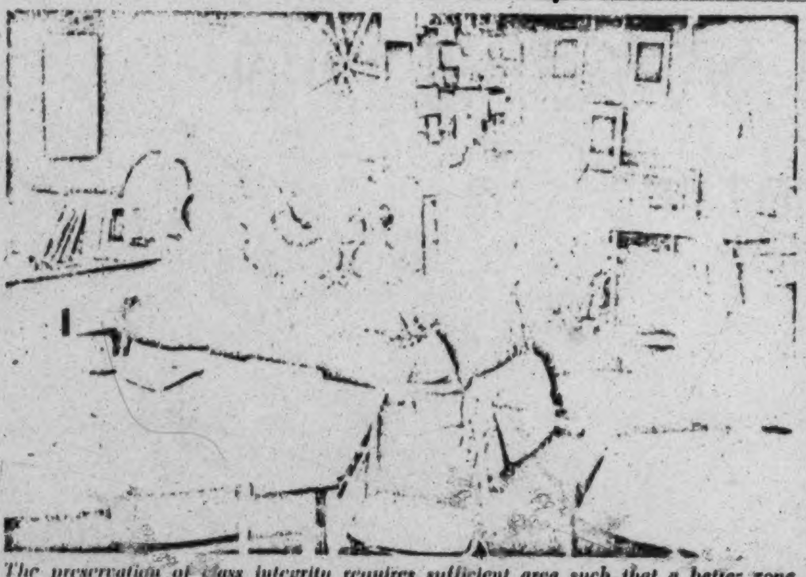
FIRST FLOOR PLAN: 1 common area 2 stage 3 administration 4 french 5 science 6 social science 7 home economics 8 industrial arts 9 mechanical 10 storage 11 music 12 upper gynasium 13 instrumental music.



Lakeview Senior Public School, Ontario: An application of 'fluid space' planning. Architect: Raymond Moriyama.



An improvised Mexican market introduces an element of enclosed space into the open learning area. This reaction to the rather bland and characterless interior of the general learning area has resulted in the creation of a delightful cave-like space for use by small groups of children.



The preservation of class integrity requires sufficient area such that a better zone can be established between groups. This effect is enhanced by organizing the class into a compact, tightly knit learning unit.

Retreating from the vulnerable openness of the general learning this small group has recreated a semblance of enclosure using caseworks, benches and tables.

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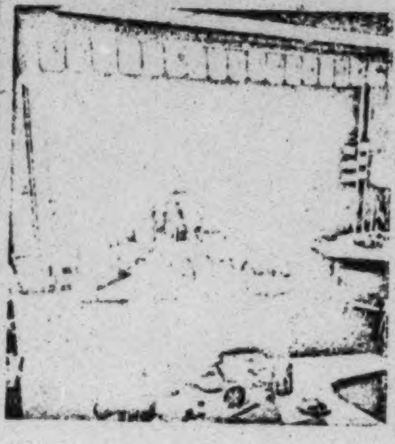
Open Plan: A Postscript



Douglas Smith

Mr. Smith is Chief Architect, Scarborough Board of Education, Ontario.

Drew's summing up could well have been written as a prologue. In fact, I believe it was and the result of his research was confirmation of his conviction. What he says in the summing up is, in principle, true of any building. It is a statement of the hopes that lay in the minds of all sincere architects and is perhaps the only thing that keeps them going.

The article is unusual in that very few of the words are those of its writer. The reader must, therefore, beware of taking sides with Drew and should draw his own conclusions from the quoted text.

It seems that man's greatest fault is the ease with which he loses sight of his objectives. I think this could be considered as the eighth deadly sin. Yet it has been his attempts at pursuing the truth that have driven it further from his mind. Nevertheless, of all the paths that divert him from his real purpose, I believe the one he now travels, the most desperate of all, may bring him back closest to his real destiny. Not to believe this is to accept a theory that we will soon destroy ourselves. A very important factor which will influence our return to this state of true living is our treatment of space—not only in its broader sense, but enclosed space, the controlled environment—architectural space, without which we cannot exist. And here we are discussing a very special kind of space: the enclosed open space. Why, in its association with education, is open space causing such furious debate? Was it invented by an architect, an educator, an anarchistic young teacher, or did it grow from a naive comment by a child? There is always the possibility that it is fact, not confined to educational buildings and is not as original an idea as some of us may think.

There are very few utopian places in this world where the environment is suitable for civilized man to exist in his natural, naked state. One of the least suitable is our own. Clothing, at least, is vital but to rely upon clothing alone would at times become extremely inconvenient. The obvious next step is to remove this extra protective skin further away from our bodies and construct buildings within which a suitable environment can be maintained. McLuhan has very concisely described this function of man and many others as being an extension of ourselves. This makes the environmental enclosure—building and architecture—at least as important as our skin. It should, therefore, be no less functional and no uglier. If the statements of those who believe that a building should not impose upon its users are true, then it is only the most functional and most beautiful that can have a negative influence. Many a disturbed mind has been generated by the application of ugly deformity or a blemished skin.

It may well be possible that one day, outside the leaves of science fiction, to control our environment without the aid of physical enclosures. But until then, we are stuck with buildings of some sort. It seems logical to me that our spatial enclosures will get larger. I think the great domes of history—the Gothic arched enclosures, Buckminster Fuller's geodesic structures, are very close links in an evolutionary process. A process which could lead us back to the possibility of re-establishing a harmonious co-habitiation with natural things. Whereas forms consisting of piled up little boxes seem to lead us back to an existence in caves where man retreated because he was frightened.* In other words, I believe that deep within us we all want to get with it—with the rest of the world's creatures and other living things. We are tired of our self-imposed divine right to take and rule and plunder to the glory of man. We are no longer quite so cocksure that this unmanagable contraption we carry in our skulls makes us that much more essential than other creatures and are not even sure that the world could not exist without us.

Another assumed divine right with which I disagree is that of the architects' (and builders') monopoly over building. The fact that civilized man has long ceased to individually construct his own nest like other animals does not mean that his basic instinct is any more extinct than his other drives. As every year that passes takes the individual further away from the satisfaction of building and leaving him with nothing more than making the payments, the kit of electric tools in the bungalow basement becomes a less adequate substitute. It seems that the individual's interest in the environment which has increased so rapidly in the past decade, the desire for involvement, the need for flexibility in fabricated environmental enclosures, participation in adapting the interior to personal needs, is the growth of an unquenchable urge.

Believing that man's desire to be in harmony with nature and his urge to build are still rampant, I think that if it were possible to wave a magic wand and suddenly make him articulate on the point, he would say to architects: *Enclose a large space where I can be protected from the elements. Make it in harmony with natural space. Destroy as little as possible and leave me free to express myself within it.*

All this, of course, is an absurd over simplification arrived at through a complicated rationalization, but to me it indicates that the idea of enclosed open space is no more original than the idea of going to the moon. It just happens that at this point in time it is technologically possible. That it should now occur within our institutions of learning and create so much debate is natural. Where else should we expect latent ideas to be resurrected and debated?

The underlying fear behind Drew's report is, I think, that a poorly considered adoption of open space as a design philosophy will result in structures enclosing barren wastes with little or no human relationship. This is, of course, well justified. A tour of our suburbs will show that we can do just that if we do not take the trouble to think.

**If, as the psychiatrist would have us believe, there exists a large number of people with a "return to the womb" complex, perhaps something should be done about it, other than suggesting that architects produce convenient dark hole structures. Who needs treatment most — the man who does not feel at home in an elevator car or he who wants to crawl back into the womb?*

CLASS TEACHING

Although it is not planned as part of this unit, you will probably have several opportunities to work with small groups before teaching a class for a whole lesson.

As you approach your class teaching discuss with your co-operating teacher the type of lesson which may best give you scope to make maximum use of the resources and the environment. Take time to plan this lesson in more detail than the previous small group experience. Try to consider each child in relation to others in the class, where you will place them, how they are likely to interact, what resources they can have easy access to. If you do this in conjunction with planning the lesson content you should be able to exercise several teaching strategies within the lesson period. Remember, you will be operating in an environment which will influence the behavior of your pupils as well as your own. Plan for this. Use the colored sheet to make your notes under appropriate headings. Arrange through the cooperating teacher for an observer to be present.

School:
Grade:
Teacher:

Name:
Group:
Date:

PLAN FOR CLASS TEACHING

Nature of activity:

No. of pupils:

Objective(s):

Content Outline	Strategies	Resources

Post-experience comments:

DISCUSSION

Well, now you are starting to get the "feel" of children and of a teaching-learning environment. There will always be other ways you could have planned the experience, or acted in the situation. If your teaching is to be open to adaptation and development, you will have to learn, early in your professional experience, to look both at yourself and at your pupils, as you teach and when you conclude each experience or episode.

Again, now, you should try a self-evaluation in the light of your plan for class teaching. Make your notes at the foot of the plan.

Similar questions, for the purpose of this unit, to those listed under small group discussion, should now form the basis of your discussion with the teacher. But remember, each lesson may have a different purpose. These experiences have tried to focus on the environment in which you as a teacher are learning to operate. On another occasion your lesson may concentrate on using the media resources, or on non-verbal communication; each will be the particular vehicle for the pupils to obtain the lesson content.

UNIT EVALUATION

This is an important part of this unit, don't overlook it! For this unit it will take several forms, each with its own purpose.

You have already completed the pink PROFESSIONAL PREPARATION QUESTIONNAIRE. You should also have written comments throughout the pink INDIVIDUAL CHOICE DIARY. Within this unit you may also have responded to the yellow ACTIVITY SHEETS.

Now, take 20-30 minutes to look back over this unit booklet, reflecting on your own responses to its contents and instructions. You are being asked to become an influential member of a developmental team in the process of curriculum building. This will take time and thought. It will be a learning experience for you as well as beneficial to the researcher and to others who will use future editions of this unit. Briefly jot down your reactions to the questions listed on the pink UNIT EVALUATION sheet.

Finally, as part of the unit, you are asked to participate in a semi-structured, tape-recorded INTERVIEW with the researcher. This should take no more than thirty minutes. Individual times will be arranged within the two weeks following the completion of the unit. The purpose of the interview is to assist the researcher in modifying the unit, by obtaining your opinions regarding it. You are not being evaluated in any way; the unit plan is the only object of scrutiny.

Please bring this unit booklet and any other notes of your experiences with you to the interview. Thank you.

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APPENDIX B

EVALUATION INSTRUMENTS

PROFESSIONAL PREPARATION QUESTIONNAIRE

This questionnaire seeks to obtain biographical information, an indication of your own assessment on particular topics related to your teaching in a spatial environment, and your present views on selected statements about teaching and teacher preparation.

This information will not be considered on an individual basis but will be coded and some descriptive data obtained regarding the group as a whole. Your responses will be held confidential by the researcher. Feel free to comment on any of the items in the questionnaire.

Name:

Address: Phone:

Previous academics: B.Sc. B.A. B.Ed. M.Ed.
Other . . . .

Major area of undergraduate study:

Other areas with more than two full courses:

Previous teaching experience: 0 1 2 3 4 5 6 6+ years

Nature of teaching experience: In conventional rooms:

In open areas:

Nature of student-teaching experiences (including observations):

In conventional rooms:

In open areas:

I. Indicate your own measure of confidence in or understanding of:

	Unknown	Great deal	Considerable amount	Moderate amount	Little
(1) Lesson planning					
(2) Use of instructional media center					
(3) Team or co-operative teaching					
(4) Teacher's control and use of voice					
(5) Teaching strategies in a spatial environment					
(6) Implications of "personal space" for children in a spatial environment					
(7) Teacher's role in the spatial environment					
(8) Child's psychological space					
(9) Group dynamics, especially in open areas					
(10) Social space as a factor in teaching					
(11) Creative use of teaching-learning space					
(12) Utilizing the physical environment					

II. Check the answer which best describes your own orientation towards various aspects of teaching and your own teacher preparation.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. Learning the formal material isn't always the most important thing, I need to apply it in the actual situation.					
2. I am sure that every intending teacher needs a preparation program fitted specifically to his/her needs and previous experiences.					
3. I enjoy working with adults more than with children.					
4. The opportunity to initiate and to try out new instructional ideas is very important to me.					
5. I feel confident that I could work well with other teachers as members of a teaching team.					
6. I could teach successfully without textbooks.					
7. I try to find something to appreciate in each person whom I meet.					
8. The child's performance in learning is more important than his development as an integrated person.					
9. I enjoy teaching children.					

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
10. It is important to me to do things very well.					
11. I do not wish other teachers or administrators to see my teaching styles and techniques.					
12. As a teacher I expect to have difficulty communicating and working with parents and community personnel.					
13. It is very important to me to be placed in a school where other teachers and administrators have a great deal to offer me.					
14. I do not feel the need to have specific and carefully organized lesson plans.					
15. I think that I will need to continue my professional education in-service.					
16. I like routine-type activities.					
17. I would not be happy if the administrators 'left me to my own devices'.					
18. Teachers should allow spontaneous movement and conversation in the classroom.					
19. A teacher should seek the opportunity to learn from the techniques of successful colleagues.					
20. Teachers should be prepared to alter their expectations of the role of the teacher.					

III. The reason for training teachers for open area schools is for them to

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. learn to understand childrens' needs.					
2. know how to control children.					
3. acquire efficient techniques.					
4. learn how to be an effective communicator.					
5. learn to adapt himself and his pupils to the environment.					
6. understand how to develop children's interest in their studies.					

IV. Free activity for pupils in spatial environments

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. encourages movement and physical activity which is natural to children.					
2. encourages individual spontaneity and creative skill.					
3. encourages co-operation and mutual aid amongst children.					
4. is the major reason why open areas were planned.					
5. is a practical way of organising a class of children of different ages and intelligence levels					

V. Important features of open area schools which teachers need to consider are:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. controlling the amount of noise generated by the class.					
2. grouping and re-grouping pupils for instruction.					
3. making daily use of the instructional media center.					
4. teaming with colleagues for instruction.					
5. being 'on show' to many colleagues and pupils.					
6. concern for each child's adaptability to this spatial environment.					
7. flexible use of time for children's learning activities.					

VI. If you were able to choose, would you prefer to teach in

.... a self-contained classroom

.... an open area environment

.... both, alternating during each day

.... either, i.e. no special preference.

.... any other ....

Name ______________________

SPATIAL ENVIRONMENT

INDIVIDUAL CHOICE DIARY

As you look through the booklet on the spatial environment you may choose to select some portions and to omit others. You may decide later to return to those sections you skimmed over on first perusal.

Please indicate below, for each item, the date you read the material or completed the activity, and your reaction to it. You will probably find it easier to record this as you complete a section. Should you return to that section later, please indicate when, and your reactions at that time. If on completing the unit, you have chosen not to do certain sections, could you please indicate your reasons.

PREFACE p. i Date: ______________

Reaction: ______________________________

____

TABLE OF CONTENTS p. iii Date: ______________

Reaction: ______________________________

____

PURPOSE p. 1 Date: ______________

Reaction: ______________________________

____

TERMINOLOGY p. 2 Date: ______________

Reaction: ______________________________

____

OVERVIEW p. 4 Date: ______________

Reaction: ______________________________

____

AWARENESS ACTIVITY p. 5 Date: ____________________

Reaction: ____

____

AWARENESS WORK SHEET-FLOOR PLAN p. 5a Date: ____________________

Reaction: ____

____

AWARENESS WORK SHEET-FLOOR PLANS p. 5b Date: ____________________

Reaction: ____

____

AWARENESS WORK SHEET-ITEM ANALYSIS p. 5c Date: ____________________

Reaction: ____

____

READINGS-INFORMATION p. 6 Date: ____________________

Reaction: ____

____

READINGS-INGALLS p. 7 Date: ____________________

Reaction: ____

____

READINGS-SHAW p. 8-9 Date: ____________________

Reaction: ____

____

READINGS-EBERLE p. 10-15 Date: ______________________

Reaction: ____

____

READINGS-HERSOM p. 16-17 Date: ______________________

Reaction: ____

____

LECTURE DESCRIPTION p. 18 Date: ______________________

Reaction: ____

____

LECTURE WORK SHEET p. 18a Date: ______________________

Reaction: ____

____

LECTURE EVALUATION SHEET p. 19 Date: ______________________

Reaction: ____

____

ADDITIONAL READINGS p. 19 Date: ______________________

Reaction: ____

____

TEACHER CONFERENCE p. 20 Date: ______________________

Reaction: ____

____

DIRECTED OBSERVATIONS-ACTIVITY 1 p. 21 Date: ____________________

Reaction: ____

____

DIRECTED OBSERVATIONS-ACTIVITY 2 p. 21-2 Date: ____________________

Reaction: ____

____

DIRECTED OBSERVATIONS-ACTIVITY 3 p. 22 Date: ____________________

Reaction: ____

____

OBSERVATION WORK SHEET-PHYSICAL FLOOR PLAN p. 22a Date: ____________

Reaction: ____

____

OBSERVATION WORK SHEET-PERSONAL NOTES p. 22b Date: ____________

Reaction: ____

____

OBSERVATION WORK SHEET-SOCIAL ENVIRONMENT p. 22c Date: ____________

Reaction: ____

____

OBSERVATION WORK SHEET-LESSON p. 22d Date: ____________________

Reaction: ____

____

TEACHER DISCUSSION p. 23 Date: ______________________________

Reaction: ____

____

DISCUSSION WORK SHEET-SUMMARY p. 23a Date: ______________________________

Reaction: ____

____

READINGS-INFORMATION p. 24-5 Date: ______________________________

Reaction: ____

____

READING-SOMMER p. 27-34 Date: ______________________________

Reaction: ____

____

READING-TRADITIONAL CLASSROOM p. 35-38 Date: ______________________________

Reaction: ____

____

SMALL GROUP EXPERIENCES p. 39-40 Date: ______________________________

Reaction: ____

____

SMALL GROUP WORK SHEET-PLAN p. 40a Date: ______________________________

Reaction: ____

____

DISCUSSION p. 41 Date: ____________

Reaction: ____________

____

READINGS-INFORMATION p. 42-3 Date: ____________

Reaction: ____________

____

READING-ANDERSON p. 44-47 Date: ____________

Reaction: ____________

____

READING-BRUNETTI p. 48-52 Date: ____________

Reaction: ____________

____

READING-DREW p. 53-64 Date: ____________

Reaction: ____________

____

READING-SMITH p. 65 Date: ____________

Reaction: ____________

____

CLASS TEACHING-INFORMATION p. 66 Date: ____________

Reaction: ____________

____

CLASS TEACHING WORK SHEET-PLAN p. 66a Date: ____________

Reaction: ____________

DISCUSSION p. 67 Date: ____________

Reaction: ____________

UNIT EVALUATION INFORMATION p. 68 Date: ____________

Reaction: ____________

UNIT EVALUATION Date: ____________

Reaction: ____________

INTERVIEW Date: ____________

Reaction: ____________

BIBLIOGRAPHY p. 69-73 Date: ____________

Reaction: ____________

Name: ....

UNIT EVALUATION

This instrument seeks your opinion. The evaluation refers specifically to the booklet on the spatial environment. If possible, you should try to consider this as a document on its own, not in relation to your previous knowledge or experience.

A. Please circle the appropriate number for each statement.

To what extent do you consider that the unit booklet on the spatial environment has assisted you to:

	Very Great				None
1. Develop an awareness of space. Comment if you wish:	5	4	3	2	1
2. Understand and use terms like 'open-space', 'open-plan', 'open education'. Comment if you wish:	5	4	3	2	1
3. Identify some of the facilities usually associated with open-space. Comment if you wish:	5	4	3	2	1
4. Assess the variety of ways space is used. Comment if you wish:	5	4	3	2	1
5. Differentiate features of the environment more applicable to open-space than to conventional settings. Comment if you wish:	5	4	3	2	1

	Very Great				None
6. Obtain insights into small group interactions occurring in a spatial environment. Comment if you wish:	5	4	3	2	1
7. Become acquainted with research on open-space schools. Comment if you wish:	5	4	3	2	1
8. Become acquainted with criticism regarding open-space schools. Comment if you wish:	5	4	3	2	[✓ 1]
9. Plan activities for small groups giving attention to the children. Comment if you wish:	5	4	3	2	1
10. Plan activities for small groups using the facilities and resources available. Comment if you wish:	5	4	3	2	1

Very Great — None

11. Become conscious of the physical environment in working with small groups. 5 4 3 2 1
Comment if you wish:

12. Plan activities for the total class to consider each child's relation to the others. 5 4 3 2 1
Comment if you wish:

13. Plan activities for the total class in relation to the physical grouping. 5 4 3 2 1
Comment if you wish:

14. Plan activities for the class to consider interaction between the teacher and the children. 5 4 3 2 1
Comment if you wish:

15. Plan activities for the class to use accessibility of resources. 5 4 3 2 1
Comment if you wish:

	Very Great				None
16. Plan lessons to incorporate several teaching strategies. Comment if you wish:	5	4	3	2	1
17. Plan lessons to incorporate alternative activities for children. Comment if you wish:	5	4	3	2	1
18. Become acquainted with articles useful for teaching in open-space settings. Comment if you wish:	5	4	3	2	1

B. If you were able to choose your teaching assignment at this time, would you prefer to teach in

______ a self-contained classroom

______ an open area environment

______ both, alternating during each day

______ either, i.e. no special preference

______ any other

C. From your point of view, please comment on:

1. Using a booklet like this to draw together some aspects of theory for use in a practical setting:

2. Any other ways for making the theoretical and practical aspects of teacher education more related to each other:

3. Any features of the unit you would like changed in any way:

4. Any other comments about the booklet:

D. Indicate your own measure of confidence in or understanding of:

	Unknown	Great deal	Considerable amount	Moderate amount	Little
(1) Lesson planning					
(2) Use of instructional media center					
(3) Team or co-operative teaching					
(4) Teacher's control and use of voice					
(5) Teaching strategies in a spatial environment					
(6) Implications of "personal space" for children in a spatial environment					
(7) Teacher's role in the spatial environment					
(8) Child's psychological space					
(9) Group dynamics, especially in open areas					
(10) Social space as a factor in teaching					
(11) Creative use of teaching-learning space					
(12) Utilizing the physical environment					

APPENDIX C:

SELECTED RESPONSES TO INTERVIEW

APPENDIX C

Initial Reaction to Booklet

Looks like something we might be able to use.

Booklet flawed me--because of size, probably; but that's ridiculous!

Wasn't familiar with open area when I came into the program--wanted to learn about it.

Oh no! not something else to do!

At first I was very much against the open area. I couldn't see why someone would want to write it down. As I read the articles it seemed far-fetched and theoretical. It seemed like someone was trying to make something out of nothing. After being in open area for a while I could see more possibilities; some articles seem very appropriate.

I don't like doing things like this but I guess it was good; I got out and did things. I wouldn't have been as interested if it had been at the university.

Looked like an awful lot of work. The articles scared most of us. It was no good whatsoever until we got into our student teaching.

I was really glad: this was something to hold on to.

It was a bad time; too many other things to do. It could be interesting, but the way it was introduced was too vague.

Everytime I approached the booklet I felt that I didn't have the time.

Timing

Could have had the booklet earlier--two or three weeks before student teaching or divided it into three or so parts.

Just crazy during student teaching--got pushed into the background.

Timing was not good--so caught up in the school situation I had to devote all my time to the school.

In the first round we were more observers, this would have been a good time for the booklet.

I used the booklet while on my assistantship; not as valuable as it would have been during student teaching or in one concentrated time period.

Need to have specific time for the booklet, then student teaching.

Really needed the booklet right from the beginning so that we could have used it when we first went into the school. Initial pages very helpful to guide us as we went into a school--we moved from one room to another for one week and the booklet would have helped us to compare features then.

Should have had booklet when I was in open area in first observation.

Some activities were not possible in this teaching round--didn't have time to do them and to teach all day.

Contents of Booklet

Different viewpoints in the readings were valuable, but then should be discussed by everyone.

Readings were only for open area--should have had the booklet while observing in the open area. It wasn't possible for me to do the activities in the closed classroom.

Found the sections on grouping helpful in my room and in other university courses.

Booklet was really practical--but some of it was repetitious. Just one or two articles were hard to get through.

Booklet needed activities to apply what the readings said.

For some articles a summary would have helped, or questions at the end would have directed us back. Small group discussions would have helped.

I never would have looked up the articles if they had been only listed in a bibliography.

Some of the articles seemed so different--didn't apply to our school.

Grouping is really important in the open area and I had no ideas about it before I read the booklet. The teachers followed the booklet almost to a "t".

Walking into the practical situation without the articles would have been traumatic. The practical setting helps you pick up lots of things--don't need more direction.

I'm sorry now that I didn't do any of the activities. Reading it again lately I can see many good ideas that I would like to try.

Use in the School Setting

Booklet was really applicable to the school setting--it's come up time and again in this second round.

You can see that some teachers don't use the resources that are available.

More person-to-person contact is possible so that we have something definite to discuss and become a little more aware of what it was for.

Much of the material could have been presented in a C. & I. class, but it's better if spaced over two or three sessions with discussion and observations.

If you use the booklet in the school setting, you have to get to the co-operating teacher first, not the student.

Theory at the university is not what is happening in the school. You can't make a judgment until you've been in the situation.

The booklet was a different approach--really the only thing we did on open area. You get tired of lecture and group presentations--important to have it in a practical setting with discussions.

It's feasible to do this in the school, but I wonder if the teachers find it applicable as there are so many things to do.

Perhaps going around to various schools would let us see different kinds of open area being used.

Features Specific to Teaching in an Open Area

Dimensions of personal space, teacher and pupil space, and different ways to use space were all new to me.

I could have adapted (my enclosed room) to open space as it was outlined in the booklet but there was no way in which I could do this with someone else's class; I want to do it with my own class next year.

This showed what it should be like. I decided that I really hadn't seen an open area and was shocked by the dividing walls.

Calgary article on team teaching shows that some things are possible, even if we didn't see them.

Teachers didn't know how to handle noise--articles showed different ways to organize so that noise isn't a major problem.

Not everyone is suited to open area--either teachers or children--it requires teamwork and the possibility of opting out.

I can't imagine an open area working well; it's much more challenging than an ordinary classroom. It seems bad to have teachers coming from a traditional classroom into an open area. They spend so much time working, but there is no team teaching, and the ideas are not being put into operation.

Freedom of movement, the library in the middle with easy access--these were really great. But there is nowhere to put your materials, the noise is terrible although I think the children are not conscious of the noise, and there should be lots more rooms for particular activities.

Self-selection in the Booklet

I would have preferred that it be compulsory--especially if it could have been given in two or three parts.

Good idea to have self-instruction in readings, activities, etc.

It depends how much of it was important to you how much was done. I would have worked better to deadlines. The booklet was pretty straightforward.

To individualize the booklet would be rather difficult--better to give it to everyone. It lost some of its effectiveness because it was optional.

If it had been truly self-instructional we could have taken it at our own pace. If you wanted it done you should have set deadlines.

We really didn't know what to do--not experienced enough to be able to select for ourselves--and the whole system teaches you to depend on others and not to make decisions for yourself.

This is O.K. so long as there is feedback and discussion too.

Teacher Preparation

More time is needed in the schools, some in every year. Make intern teaching compulsory in any school, including those out of the city.

Why can't we go out to teachers and talk to them over noon hours? This is one of the values of whole days. We learn little things in general conversation, not in the classroom.

Teacher education should be more practical: theory is good, but you can't just talk about interacting with people; you have to do it day in and day out.

Integrate the professional subjects, like Plan B, with the school and give longer exposure to different aspects over the four years.

Need directed observations and graduated experiences in schools--would have got more out of it in first year.

Before you do anything about the schools, do something about the university. We need more applied, straight teaching type courses--other courses sound good, but are not practical.

We can relate theory to practice if the student, teacher and professor are in the same setting. We are only producing teachers in the same way as they did twenty years ago: we get shot down if new ideas are attempted.

Teacher education should be tailor-made to me--that would be ideal. But it is important to be out in the school setting.

Workshops before and after student teaching are worthwhile. Need to go into school right at the beginning. Also good to see different schools.

Need to stress the philosophical and the practical equally in teacher preparation. Classroom experience exposed you to open area--more valuable than talking about it in the university.

Need to stress and pay more attention to certain things--boils down to professionalism--coming from student level to professional attitude--not too sure where we fit in--this study helped us to realize where some things fit.

Miscellaneous Suggestions and Comments

Feedback worked, but it probably would have been more effective if a few lectures and discussions had been given with the booklet in the open areas themselves.

The booklet painted too rosy a picture. It could have had more local content with effectiveness and difficulties included.

Some of the articles could have been left out, and some of the worksheets.

Student teachers and co-operating teachers never mix: can you do something about that?

University consultants could have helped by giving their perceptions and suggesting things which could be applied in your own classroom, even if not in the one you are in at present.

Some of the evaluations could have been cut out, especially on the Individual Choice Diary which seemed time consuming and unnecessary.

The booklet should have been split into smaller segments with discussion on each section.

More space could have been provided in the booklet for notes and scribbling.

The booklet could be applied to the self-contained classroom--I did--because some are more like the open space descriptions than the open areas.

Very worthwhile to have open area exposure as part of teacher preparation if you're going to teach in one.

My opinions have changed because of the materials in the booklet and I'm now trying some of these ideas in my room.

I'd like to see what is happening in other schools, perhaps through an in-service activity. We (the staff) took this booklet together as an in-service and we seem to have got a lot from discussing it together.

Better if student came out and just worked on the booklet rather than trying to fit it in with student teaching--then we could have time to talk about it with them.

The booklet needs to be cut down, then given a couple of seminars as in-service, and make the readings prerequisite so that there can be good discussion and the generation of more articles from those who attend.

The articles were useful to the students but not to us--I read them and saw what you were doing so didn't bother with the activities.

There isn't enough communication between the university and the school. The students don't know what we are doing and we haven't been told what they are doing. The booklet at least gave us some common ground. But we could be consulted on the assignments and on the activities appropriate in our particular settings.

APPENDIX D:

SELECTED COMMENTS FROM THE INDIVIDUAL CHOICE DIARY

APPENDIX D

Introductory Sections

Very clearly laid out, concise, and stimulated my curiosity.

Seems to require a great deal of time and energy but I'm willing to try.

Well structured, alternating readings and activities.

Very informative: clarified a lot of terms.

It is extensive and impressive--but I'm not too sure what it all means.

Good. Brief, to the point, and explains quickly what we're getting into.

Having the booklet for the first time, how do you know which parts you want to skim and which you want to read in detail?

I don't quite understand the overview.

The time suggestions are impractical unless each activity is specified by a deadline. Purpose is disturbing--there is no need for this awareness.

Activities

Good activities--really makes one aware of the spatial arrangements.

Teachers often overlook the classroom without the children.

Sounds interesting, easy to follow.

Develops awareness of need to adapt physical space, encourages analysis and evaluation, significant for the student but unnecessary for the teacher. Why not map at intervals during the day to see changes?

It got me thinking about grouping and interaction--good.

Forced me to think what I liked and disliked.

Interesting to experiment, but difficult in someone else's room.

Necessary for the first exposure to open areas.

Made you think formally about your own area and how and why you work in these areas.

No objectives were stated for these activities.

Students will have insufficient background to see what needs to be seen.

Flexibility in wanting to do some of these activities is greatly limited by overcrowding.

Lecture and Outline

Having one comprehensive unit—including lecture notes--is very good because it keeps ideas together.

Clarified ideas in the previous readings, informative, and a good overall summary.

Some topics I wouldn't think about on my own.

Very realistic lecture. A good look at the subject.

Discussion of the articles is also necessary; it was good to get the author's personal reactions.

Teacher Conferences and Discussions

Good, logical, effective outline.

Helps student to feel more confident.

Essential: I restructured my own room.

Excellent format for any teacher to follow.

Appreciated the guided questions.

Many of these questions were covered in our first meeting with the students; the autobiography was already available.

Never held--no opportunity to use worksheets.

Unable to discuss any of these questions with the co-operating teacher.

Became a session on individual pupil problems, not on open-space.

Directed Observations

Significant activity for student, unnecessary for the teacher.

Repetitious of previous activities.

Attention on alternatives is good.

Very good--may be easily modified to incorporate some other university assignments.

Made us aware of children's reactions.

Purpose and directions very clearly stated.

Helped in setting up materials and the physical setting.

Good headings--helps to know what to look for.

Not too clear whether I've done this accurately.

Good for experienced teachers to watch for, too.

Small Group Information and Plan

Very good; directives very helpful.

Helpful guide questions and planning points.

Clear outline.

More helpful at the beginning of student teaching.

Good way to set up a lesson plan.

No opportunity to work with groups during this teaching round.

This asks too much--I don't have time to sit down and write all that information out.

Diminishing the teacher as focal point is an interesting concern.

Class Teaching Information and Plan

Post experience comments should include explicit statement regarding the achievement of the objectives.

Allow more room on the worksheet.

Observers for this and the group activities are unnecessary--only make me more nervous.

Directions were clear, good work sheet plan.

Readings, Information Sheets and Additional Readings

Good structure and directions.

Provides purpose, adds personal touch to booklet.

Impressed by groupings of readings.

Teaching all day and every day--didn't have time to read the extra articles.

Stresses architectural facets to an excessive degree.

Good: makes you aware of what's expected.

I'm beginning to see what I'm supposed to be doing.

Good practical information; good time to introduce critical views.

Some material doesn't seem to be recent enough.

I haven't time to track down the additional readings. "Playboy?"

Bibliography

Very complete and extensive.

Valuable resource list.

No idea there was so much written on open-space.

There's an awful lot of reading to be done on the subject. I fail to see how anyone with a full schedule could possibly go through it all. It would probably be interesting and educational, but terribly time-consuming.

Ingalls; So you're teaching in an open area

Interesting, practical and down to earth.

Very convincing, well supported, very realistic ideas.

Good to introduce open-space ideas.

Enjoyable, short and to the point.

What it should be--not how it is!

Some statements don't correspond with my observations.

Useless for the experienced teacher; doesn't say anything to an open area teacher.

Many teachers are too insecure to function well in an open area.

Shaw: A teacher looks at open space

Excellent; she seems sold on it but I can't believe that it really works.

Enjoyable--makes you think that there may be another way you could handle things.

Very interesting. I want to try individual contracts.

These arguments are equally applicable to individual classrooms.

Really interesting for the teacher's role, use of individualised instruction, and training for the real world.

One-sided and unconvincing; no time given to disadvantages.

Open area does not guarantee a radically different type of teaching as she seems to imply.

Emotionally charged: why reject the traditional classroom so thoroughly?

Unbelievable for one teacher and a normal sized class.

Eberle: The open space school

Long article--philosophical--very enlightening and informative.

Excellent: more realistic than the others.

Well written: applies to conventional classrooms too.

Very good--teachers must be flexible facilitators using new teaching techniques. A positive attitude to open areas.

Dull reading--but very informative.

Author bias was annoying; superfluous information used as padding.

Didn't enjoy it--boring, repetitive, theoretical.

Hersom: Open space schools: Tools for teachers, environments for learning

Excellent: most sensible description yet.

Some explicit and worthwhile ideas--matching pupils and teachers.

Well written, informative and well supported.

Good layout--something to consider before getting into open areas.

Like to see open area used this way.

Ignores overcrowding and abuse of space.

Are the schools actually using open space in these ways to achieve these kinds of aims?

Impression that all outstanding teachers are found in open areas.

Refreshing absence of moral justification and concentrates on actual tasks.

Good summary of physical features, more realistic, objective.

Sommer: Small group ecology

Highly enlightening but very technical.

Interesting: an area to pursue.

Fascinating ideas--my first exposure to relational space.

Could possibly be summarized.

Enjoyable, valuable to foster group relations; not always pertaining to the classroom.

Intriguing--provides ideas of things to watch for in small groups to aid their effectiveness.

Observations based on adults--applicable to children?

Lengthy, hard to concentrate on, rambling--got bogged down.

Confusing, difficult to follow.

Traditional classroom--never!

Good as a practical example; reflects the views of some of us.

Enthusiastic and straightforward--but is it as smooth as this?

Cooperative aspect very appealing; good planning and use of facilities.

Good to know that open area can be used for what it's intended and not try to make it a self-contained classroom.

Nothing that could not be done in a traditional classroom.

At this point open area is becoming less undesirable in my mind.

Sounds good--too bad more teachers can't get together like this.

Anderson: Open-plan schools: Time for a peek at Lady Godiva

Strong opinions: good and bad points of open area are presented.

Good constructive criticism; practical considerations not covered up.

Sounds as if he actually worked in an open area for a while.

Negative over reaction.

Interesting and thought provoking; voices some of my own doubts.

Emotionally charged--several lines of thought, no argument.

Good points--you see open areas in a different light.

Brunetti: Open space: A status report

Logically organized, dispassionate, interesting and informative.

Supports positive aspects of open space education.

Comprehensive--superior report with statistical evidence.

Good for those beginning in open space.

Too long, small print, repetitive--too bad it wasn't summarized.

Many ideas are self-evident.

Good overview and objectivity--but dry.

Totally different from what I've observed: team membership seems to be the key to success.

Drew: Open plan

Very well organized and presented comprehensively.

Enjoyable--but objective not clear.

Good to have a wide variety of comments--fluid space seems to be a logical answer.

Another honest article presenting both sides.

Very good--variety of quotes makes it provocative, interesting.

Could be condensed--building isn't that important: it's what goes on inside.

Illustrations are wasted.

Conglomeration--disjointed hodge-podge without evidence.

Good summary and discussion article.

Smith: Open plan: A postscript

Well worth reading as a postscript to Drew--makes you re-think.

Good concluding article--takes us away from a purely educational orientation to open space.

Unnecessary, purposeless, confusing.

Sophisticated style--to the point: good feedback.

APPENDIX E:

SELECTED RESPONSES ON ACTIVITY IMPRESSIONS SUMMARY

APPENDIX E

1. In what ways do the facilities and furniture assist or hinder the children and the teacher?

Rows are more orderly and consistent, but not good for grouping.

Furniture adds to socialization--sitting facing each other--but it affects their attention span.

Huge windows are nice for sunlight, but are also distracting--kids play in the long curtains.

Coat wall dividers allow groups to work in partially isolated areas.

Moveable furniture allows for free areas at the sides and back of the room.

Tables and carrels were seldom used except to pile stuff on.

Could not teach the whole class while they were sitting in their places--the area was too big.

Carpeting is essential; washroom and sink in the area are a good idea.

2. What roles does the teacher have in this spatial environment?

Instructor, organizer, motivator, disciplinarian, counselor.
Leader, guide, resource person.
Facilitator, catalyst.

3. What preparations are desirable to ensure that children experience a variety of personal contacts? Are these contacts difficult to maintain in this setting?

Teacher must be organized--block of free time would help.

Student aides are used for problem readers.

Variety of personal contacts--change interest groups and seating plans.

Children allowed to intermingle and go to interest centers.

Bring out other resources.

4. What distractions occur in a spatial setting?

Disorganized movement in the halls.

Library located in the center causes distractions, especially for those using the library when peripheral classes move.

Noise.

Windows, especially the floor to ceiling curtains.

Desks seem quite close together.

Changing teachers.

5. Does the teacher tend to use instructional strategies other than the lecture method? If so, why? What complimentary facilities are required in these circumstances?

Yes--audio-visual equipment depends on resources.

Seating arrangement on floor--class discussions, listening to a record, use of audio centers, showing film strips, use of individual carrels.

Yes--groups, filmstrips, records, tapes.